Managing Deep-Rooted Invasions

Brush Busters Philosophy

- Treat brush when most vulnerable.
- Use most effective treatment option.
- Be environmentally and user safe.
- Keep everything simple.
Benefit of Brush Busters

Early control vs. Later Control

- 1941 - 213 trees removed
- 1945 - 109 seedlings removed
- 1952 - 185 seedlings removed
- 1957 - 75 seedlings removed
- 1964 - 107 seedlings removed
- 25 years
  - 689 plants removed
  - including 473 seedlings

Brush Management Treatment Life

$10/acre vs. $200/acre
Current Brush Busters
Species

- Mesquite
- Cedar
- Pricklypear
- Chinese Tallowtree
- Greenbrier
- Yucca
- Saltcedar
- Huisache
- Macartney Rose
- Cut Stump Treatments

Brush Busters: How to Beat Mesquite
What’s the Target?

Select Appropriate Nozzle
Mesquite Stem Spray Nozzle

ConeJet 5500-X1 or X2
ConeJet 5500-X8

Screen/Check Valve for Mesquite Stem Spray

- 100-mesh;
- Brass or polypropylene with stainless steel screen.
- Prevents clogging of nozzle;
- Prevents dripping of spray from nozzle
Brush Busters
Stem Spray

Mesquite Stem Spray Equipment

24-in. wand

Back-saver shoulder harness
Triclopyr

- 15-25% triclopyr + 75-85% diesel or vegetable oil.
- Lightly wet all stems, all way around, from ground line to height of 12”.
- Works anytime of the year.
- No soil activity.

Brush Busters Stem Spray

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Pump-up Garden Sprayers
Backpack Sprayers
ATV-Mounted Sprayers
ATV-Mounted Sprayer Rigged
For 3 Spray guns
Mesquite Leaf Spray Nozzle
ConeJet 5500-X8
Mesquite IPT Leaf-spray Ingredients Mixed in Water as a Carrier

Triclopyr  Clopyralid  Surfactant  Spray marking dye

Individual Plant Treatment Rates
Sendero™

New herbicide label from Dow AgroSciences targeting primarily mesquite.

- Stand alone product, no mixing of herbicides
- Clopyralid + Aminopyralid
- IPT leaf-spray suggested rate is 1% 1.28 oz/gallon
- Have investigated lower & higher rates

Sendero® IPT Research

2012 Applications (10 Sites)

Percent App Mortality 1 Year After Treatment

- Sendero 0.5%
- Sendero 0.75%
- Sendero 1%
- RemRec 0.5%

Research conducted by Texas A&M AgriLife Extension
Can Sendero be mixed with diesel for stem-sprays or cut-stump treatments?
Brush Busters Leaf Spray

- 1% Sendero or
- ½% Triclopyr + ½ % Clopyralid
- ¼% Surfactant
- ¼% Dye
- Spray to wet after leaves turn dark green.
- Spray window – 45 days after bud break through September??

Carbohydrate Flow

?
Brush Busters Mesquite Leaf Spray

Don’t spray if:

1. leaves are wet,
2. foliage has >25% damage due to hail, insects, or disease,
3. there is new growth evident in twig tips.

Wait until 3rd growing season after mesquite top killed/damaged by fire or mechanical disturbance before using leaf spray.
Brush Busters: How to Master Cedar
1 Power Pellet = 2 cc Velpar L
Brush Busters Soil Spot Spray

- Ashe - 2cc/3 ft. ht.
- Redberry <6 ft. - 2 cc/3 ft. ht.
- Redberry >6 ft. - 4 cc/3 ft. ht.
- Add 2 ounces dye/gallon spray mix.
- Apply to soil under drip line.
Brush Busters Cedar Leaf Spray

- Apply spring through summer.
- Do not spray if cedar foliage is wet.
- Do not spray within 100 ft of known sinkholes or soil fractures.
- Ashe juniper may have endangered species protection.
- Picloram requires pesticide applicators license.

1% Picloram + ¼% Surfactant + ¼% Hi-Light Dye
Herbicide Cost to Individually Foliar Spray Various Size Classes of Juniper

![Herbicide Cost Chart]

Hand Grubbing

![Hand Grubbing Image]
Brush Busters Pad Spray

Surmount

- Fluroxypyr (.96 lb/g) + picloram (1.19 lb/g)
- Restricted-use
- Replaces Tordon 22K for IPT pricklypear
Brush Busters Pad Spray

- 1% Surmount
- 1/4% Surfactant
- 1/4% Dye
- Spray all pads to wet.
- Spray anytime of year, but best before expected rainfall and above 60°F.

New “High Load (HL)” Herbicide Formulation

**PastureGard**
- 1.5 lb/gal triclopyr ester
- 0.5 lb/gal fleroxypyr

**PastureGard HL**
- 3.0 lb/gal triclopyr ester
- 1.0 lb/gal fleroxypyr
**2013 PastureGard HL Pricklypear Trials**

**5 Counties**

<table>
<thead>
<tr>
<th>Plant-kill, %</th>
<th>PastureGard HL 1.0%</th>
<th>Surmount 1.0%</th>
<th>Tordon 22K 1.0%</th>
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<tbody>
<tr>
<td>0</td>
<td>80</td>
<td>76.6</td>
<td>86.75</td>
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2 Years After Treatment

**Brush Busters:**

Cut Stump Treatments

1. Certain herbicide treatments highly effective when applied to recently cut stumps.
2. Brush Busters: two 3-step methods.
Brush Busters Cut Stump Spray for Hardwood Species

① 15% triclopyr + 85% diesel fuel or vegetable oil.
② Works best on:

- Algerita
- Baccharis
- Blackbrush
- Bois d’arc
- Bumelia
- Catclaw acacia
- Catclaw mimosa
- Chinese tallowtree
- Elm
- Hackberry
- Huisache
- Lotebush
- Mesquite
- Oaks
- Pricklyash
- Saltcedar
- Texas persimmon
- Winged elm
- Yaupon

Brush Busters Cut Stump Spray

① Cut every stem close to soil surface.
② Avoid leaving soil on the cut stump.
③ Spray stump **immediately** after cutting.
④ Adjust nozzle to deliver coarse mist.
⑤ Spray entire cut surface, especially outer edges.
⑥ Spray bark from cut to ground level.
⑦ Use Hi-Light spray dye to assure good coverage.
Brush Busters Cut Stump Spray

1. **Hand spraying**: use Conejet 5500-X1 to X3 nozzle.
2. **Hydraulic shears**: use ConeJet 5500-X12 nozzle.

Cut Stump Treatments Can Provide Almost 100% Plant Mortality If Done Properly
Brush Busters Cut Stump Treatments

Spray every cut stem.

One stem on this tree was not sprayed.

Spray entire cut surface & bark from cut to ground.

Part of this cut stem was not sprayed.

Brush Busters Cut Stump Spray for Redberry Juniper

- 4% Tordon 22K
- ¼% surfactant
- Water carrier

Redberry Juniper:
Multi-stemmed from ground.
Flecks of white resin on leaves and twigs.
Hydraulic Shears/
Skid-Steer Loaders

- Do not cut stems below soil surface.
- Use ConeJet 5500-X12 nozzle.
- Place nozzle directly over cut stump to spray.

Cut Stump Treatments Are Only As Good
As The Workmanship of the Operator

Good job shearing, but
poor job spraying the
stumps.
Brush Busters

How to Take the Luck Out of Controlling Yucca

Undiluted Whorl Spray

2 to 4 cc/whorl
Triclopyr + Oil Whorl Spray

X1 Nozzle

2 second spray/whorl

15% Triclopyr + 85% Diesel

HI-LIGHT™
### Yucca Mortality 2YAT Averaged Across 16 Locations

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<tr>
<th></th>
<th>Triclopyr</th>
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<tr>
<td></td>
<td>2cc/whorl</td>
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<tr>
<td>Average</td>
<td>61%</td>
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<tr>
<td>Range</td>
<td>17%-89%</td>
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### Treatment Cost/Whorl

<table>
<thead>
<tr>
<th></th>
<th>Triclopyr</th>
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<tr>
<td></td>
<td>2cc/whorl</td>
</tr>
<tr>
<td>4.3 cents</td>
<td>8.6 cents</td>
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Baccharis

- Stem spray: 25% Remedy + diesel
- Leaf-spray
  - 0.5% PastureGard HL
  - 1% Triclopyr (Remedy Ultra, generics)
  - 1% Surmount

Broadcast Spray Rules of Thumb

- 20 to 30 psi
- 10 to 30 gpa
- CALIBRATE!
Sprayer Calibration Example

Recommended Herbicide Rate: 1qt/ac

Importance of Sprayer Calibration

Recommended Herbicide Rate: 1qt/ac