Best Management Practices for Post-Fire Woody Brush Control in the Lost Pines Region of Texas

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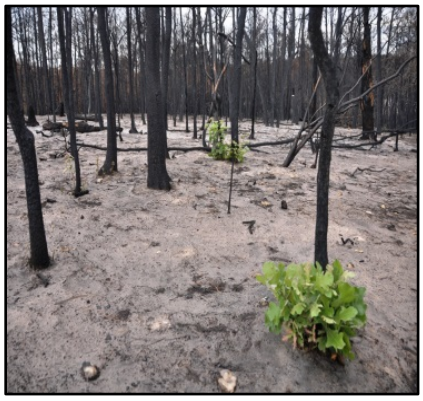
Section 1.0 Introduction

Fire is one of the most destructive forces of nature. The Bastrop County Complex Fire of 2011 was no exception. This high-intensity fire was the most destructive wildfire in Texas history - destroying 1,660 homes and wiping out 16,200 acres of an already drought-stressed pine-hardwood forest ecosystem.



Re-sprouting Hardwoods

Benefits of Fire: Not all fire is bad. Fire can also help set the stage for a new beginning. A high-intensity wildfire, like Bastrop, can easily change the entire species composition of a forest. In contrast, a low intensity fire can be beneficial in managing woodlands for a variety of objectives; such as controlling and managing invasive woody and herbaceous plant species.

The Issue: Some areas of Bastrop were burned more severely than others. Within these areas of the fire scar, the pines and hardwoods were killed – having been burned to the ground level. However, the below ground portion of many of the hardwoods were left unharmed, resulting in vigorous re-sprouting from the lower trunk. These trees, mostly oaks, have large, mature root systems which support high volumes of woody regrowth. Because sprouts are able to regenerate so quickly, removing the above ground growth of these plants with pruning shears, chain saws, axes, hydraulic shears,

shredding, fire, etc…, often only intensifies sprouting. Since the native loblolly pines killed in the fire will not grow and thrive in the shade of other trees, the pine component of the forest possibly could be completely lost and replaced by hardwoods. The challenge is finding a solution which will release the native loblolly pine regeneration by controlling the competition from the excessive sprouting of the hardwoods.


Container Grown Pine

A Solution: In areas that were not burned as severely during the 2011 wildfire, there may be natural loblolly pine regeneration. For areas with no natural pine regeneration capacity, replanting may be the solution and reforestation programs are available. The container-grown seedlings however, have the same challenge of growing in the shade of the re-sprouting oaks and must be able to overcome the competition to successfully establish as part of the new post-wildfire landscape.

Section 2.0 Purpose

The purpose of this document is to outline two methods of applying herbicide to reduce and control the competition to pines created from re-sprouting hardwood species (primarily oak, and yaupon holly). The goal is to allow the native loblolly pine to again become a significant component of the next forest woodland.


Natural Pine Regeneration

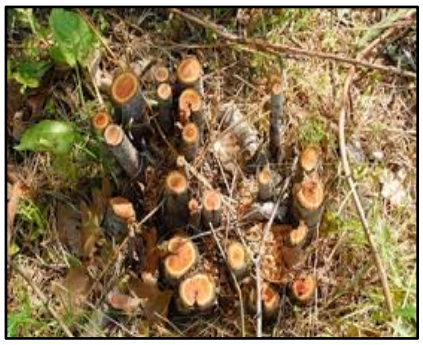
By implementing the practices described in this document, landowners and land managers will be able to selectively kill and control unwanted woody vegetation- with little or no damage to other desirable vegetation.

NOTE: *Please keep in mind that controlling woody plants is not a "once and done" job. The applicator will need to periodically monitor the woodlands to identify and eliminate any unwanted regrowth. The goal is not to create a wooded stand completely void of hardwoods, but instead, manage the volume of the hardwood regeneration, allowing natural pine regeneration and/or pine planting.*

Endangered Species Considerations: The United States Fish & Wildlife Service has approved the use of basal applications of Remedy and diesel, applied according to the label, for the control of competing woody vegetation, for the goal of establishing pine trees in critical habitat areas of the endangered Houston toad.

Section 3.0 Treatment Methods

3.1 Cut Stump Spray Method for Woody Plant Control



Cut stems ready for herbicide

Description: Cut stump treatments are most useful where the target trees or shrub (sprouts) can be selectively killed with little to no damage to surrounding vegetation. Cut stump treatment is effective in control of basal sprouting.

When to Apply: Any time of the year, although the best results occur during the spring-summer growing season.

Step 1: Preparation and Equipment:

Remove the top growth using pruning shears, a sharp ax, chain saw or hydraulic shears.

The herbicide is applied using a spray with a pump-up garden sprayer, backpack sprayer, or sprayer mounted on a four-wheel all-terrain vehicle (ATV) or hydraulic shears.

To make sure that you cover the stump adequately when using a sprayer attached to hydraulic shears (skid /steer loader), use an adjustable cone nozzle with a relatively large orifice (such as a Conejet 5500-X12 nozzle). For hand-held spray guns, an adjustable cone nozzle with a small orifice nozzle (such as a Conejet 5500-X1 or X3) is recommended.

Step 2: Mix the Herbicide with Diesel Fuel or Vegetable Oil

Mixture of Remedy herbicide and diesel fuel or vegetable oil is recommended. Diesel fuel oil or vegetable oil acts as coating agent and penetrant to ensure good coverage and absorption of the herbicide. The recommended mixture is 25 percent Remedy and 75 percent diesel fuel oil or vegetable oil (see mixing table below). Using vegetable oil instead of diesel fuel oil increases the cost but may be desirable in some situations.

Note: A vegetable oil known to mix well with Remedy is, ***JLB Oil Plus.***

Application using Back Pack

Mixing Table (Cut Stump Method)				
Herbicide Name	% Herbicide	Amount of Remedy/Gallon(s) Mixed *		
		1 gal.	5 gal.	10 gal.
Remedy	25%	1 qt.	1 gal. + 1 qt.	2 gal. + 2 qt.

**The herbicide is mixed with diesel fuel oil or vegetable oil*

When mixing Remedy with diesel fuel oil or vegetable oil, pour the required quantity of Remedy into a mixing container or spray tank, then bring the mixture to the total volume desired with diesel fuel oil or vegetable oil. Vigorously shake or agitate to ensure thorough mixing. One ounce of Hi-Light blue or red spray-marking dye should be added for each gallon of spray mix.

For those who wish to avoid the work or mess of mixing Remedy with diesel fuel oil or vegetable oil, a "pre-mix" of Remedy and vegetable oil is available. The "pre-mix" is called Remedy RTU. To use this product, simply pour Remedy RTU from the container into the sprayer and apply the mix to cut stumps following the label directions. One ounce of Hi-Light blue spray-marking dye should be added for each gallon of spray mix.

Step 3: Cut and Spray the Cut Stump

Cut every stem of the plant as close as possible to the soil surface without getting your tool in the soil. Avoid getting soil on the cut surface.

Spray the stump **immediately** after cutting it. Adjust the spray nozzle so that it delivers a coarse mist in a cone-shaped pattern. Hold the spray wand so that the nozzle is within 1 or 2 inches of the stump and spray the entire cut surface until it is wet, especially the outer edges. Using the dye as an indicator, spray the entire surface of the stump almost to the point of runoff.

If you use a spray system attached to hydraulic shears, position the spray nozzle directly over the cut stump, high enough to ensure that all cut stump is within the spray pattern.

3.2 Basal Spray Method for Woody Plant Control

Description: Basal bark applications involve applying herbicide to the lower 12 inches of stems and trunks. Herbicide is applied using an oil based carrier (diesel fuel, kerosene, vegetable oil) to increase movement of the herbicide through the bark. Dyes formulated for basal applications allow the applicator to easily see coverage of the target and if excessive off-target spray is occurring. Basal applications are most effective on trees with a diameter less than four to six inches since the bark on larger trees may reduce herbicide absorption. Trees can be treated any time of the year, but the stems must be dry at the time of application. The bark should be thoroughly wetted with the spray, but applying until runoff is not necessary.

NOTE: *This method is most effective on stems that are 6 inches or less in diameter.*

When to Apply: This treatment can be applied any time of the year - although the best results occur during the spring-summer growing season.

Step 1. Prepare Equipment: The herbicide will be applied using a spray with a pump-up garden sprayer, backpack sprayer, or sprayer mounted on a four-wheel all-terrain vehicle (ATV).

To make sure that you cover the lower stem adequately when using hand-held spray guns, an adjustable cone nozzle with a small orifice nozzle (such as a Conejet 5500-X1 or X3) is recommended.

Step 2. Mix Herbicide Spray: A mixture of Remedy herbicide and diesel fuel or vegetable oil is recommended. Diesel fuel oil or vegetable oil acts as coating agent and penetrant to ensure good coverage and absorption of the herbicide. The recommended mixture is 25 percent Remedy and 75 percent diesel fuel oil or vegetable oil (see mixing table below).

Mixing Table (Basal Spray Method)				
Herbicide	**% Herbicide**	**Amount of Remedy/Gallon(s) Mixed ***		
		1 gal.	5 gal.	10 gal.
Remedy	25%	1 qt.	1 gal. + 1 qt.	2 gal. + 2 qt.

**The herbicide is mixed with diesel fuel oil or vegetable oil*

When mixing Remedy with diesel fuel oil or vegetable oil, pour the required quantity of Remedy into a mixing container or spray tank, then bring the mixture to the total volume desired with diesel fuel oil or vegetable oil. Vigorously shake or agitate to ensure thorough mixing. One ounce of Hi-Light blue or red spray-marking dye should be added for each gallon of spray mix.

Basal Spray Method

For those who wish to avoid the work or mess of mixing Remedy with diesel fuel oil or vegetable oil, a "pre-mix" of Remedy and vegetable oil is available. The "pre-mix" is called Remedy RTU. To use this product, simply pour Remedy RTU from the container into the sprayer and apply to cut stumps following the label directions.

Step 3. Spray the Stems: Spray the Remedy and oil solution all the way around the base of the plant from about 12 inches high to ground level including the root collar area. Apply the spray till just prior to the point of runoff. Be sure to get complete coverage around the stems for good control.

Comparison Chart of Treatment Cost/Efficacy:		
	Cut Stump	**Streamline Basal**
Control Effectiveness	Excellent	Good
Treatment Costs	High	Moderate
Labor Involved	High	Moderate
Drift	Minimal	Minimal

Section 4: Support Documents and Website Links:

Vendor Listing *(vendors providing both shearing and hand spraying services)

Acorn Forestry
Justin Penick
P.O. Box 151537, Lufkin, TX 75915-1537
office 936-875-5400, cell 936-875-2499
Info@acornforestry.net
acornforestry.net

B-N-T Services, LLC
Bill Stevenson
51 Bird Farm Road, Huntsville, TX 77320-2709
936-581-2977 office
bntbill@hotmail.com

IBF Construction & Reforestation, LLC
Matthew L. Buchanan
P.O. Box 165, Carthage, TX 75633
office 903-693-4929, 903-692-2406 cell
IBFTree@gmail.com

Kessler, Tommy
Olvera Reforestation Service
Manuel Olvera
903 Mockingbird Ln., Atlanta, TX 75551-1994
office 903-244-4010, cell 903-244-4010
903-796-1176 home
Olvera _norma@sbcglobal.net

P.O. Box 816, Linden, TX 75563
office 903-756-7001, cell 903-826-3306
tekessler@windstream.net

Kollin Hurt Forestry, Inc.
Kollin Hurt
P.O. Box 211, Gilmer, TX 75644
office 903-790-0317, cell 903-790-0317
kkhurt@yahoo.com

Nelms Dozer, LLC
Jason Nelms
P.O. Box 5, Pennington, TX 75856
office 936-638-2072, cell 936-546-8061
Nelms1@yahoo.com
www.nelmsdozer.com

***NOTE:** This listing does not constitute a complete listing of service providers. Please consult other area directories for additional service vendors.*

Recommended herbicide: You can purchase specialty herbicide products at most local Farm and Ranch Supply stores. **Below are some local suppliers:**

- **Tractor Supply**, 441B State Hwy, 71 W. Bastrop, 512-321-3660
- **Bastrop Feed & Supply,** LP, 777 Hwy. 95 N, Bastrop, 512-321-3700
- **Smith Supply**, Loop 230, Business 71, Smithville, 512-237-2201
- **Livengood Feeds,** 106 Hwy. 71 W, Bastrop, 512-332-0340

Supporting Literature

- http://bastroprecovery.org/
- http://www.treefolks.org/
- http://texasforestservice.tamu.edu/main/popup.aspx?id=16330
- http://www.arborday.org/takeaction/community-tree-recovery/campaigns/texas.cfm
- http://texasconservationcorps.wordpress.com/ecorps-in-the-news/ecorps-news-archives/lost-pines-recovery-team-tales/
- http://co.bastrop.tx.us/bcdisaster/images/Natural_Resources/Bastrop%20Lost%20Pines%20Habitat%20Recovery%20Project%20Master%20Plan%20revised%204-10-12.pdf

Section 5: Where to get Technical Assistance

Texas A&M Forest Service:
Daniel Lewis, Staff Forester III, CF,
P.O. Box G, La Grange, Texas 78945
Phone: (979) 968-5555
Email: dlewis@tfs.tamu.edu

Natural Resource Conservation Service
Bastrop Service Center, 507 Old Austin Hwy., Bastrop, Texas 78602
Phone: (512) 321-2489

Texas A&M AgriLife Extension Service
Rachel Bauer, Extension Agent
901 Pecan Street, P.O. Box 650, Bastrop, Texas 78602
Phone: 512-581-7186
Email: bastrop-tx@tamu.edu

US Fish and Wildlife Service
Phone: (512) 490-0057
Email: http://www.fws.gov/