

**Project Subject/Title: Deer Repellents for reforestation plantings**

**County: Burnett**

**TRS: T39N, R9W, Sec.9**

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**Type Of Prescription: Planting/repellent**

**Year Initiated: 2003/2004**

### **Abstract/Prescription:**

A deer repellent test of a number of products (all liquids applied as a spray) was conducted on the Governor Knowles State Forest (T39N, R9W, Section 9) in the fall of 2003. The site selected was relatively level, had sandy soil, and had been clear-cut several years previously. Jack pine had been hand planted in scalps in 2002 but failed primarily because of deer browsing. Replanting to jack pine was done in the spring of 2003 in existing scalps. Some seedlings from the initial planting remained on the site in the fall of 2003. Deer were observed on the site prior to application and numerous tracks and droppings indicated a common presence. Browsing was observed during application on some of the jack pine seedlings, burr oak stump sprouts, and other woody plants on the site.

### **Methods and Materials:**

Evaluations for existing browse damage and application of all repellents were done on November 3, 2003 by WDNR Forestry personnel. Weather that day was cloudy, windy, 30 degrees and light snow began falling at noon. One row was selected for each product and every third tree within the row was treated with the product. At least 35 seedlings were treated with each product. All trees in the row were evaluated for browsing damage on a scale of 0 to 3. 0) had no browsing, 1) some buds were still present, 2) all or most buds were gone, 3) was a dead tree. Two untreated rows were left between treated rows to avoid having overlap repellent effects on adjacent trees. One untreated control row was also evaluated. All trees (both treated and untreated) in the test rows and the control were again evaluated for browsing damage on May 18 2004. Deer were again sighted in the area, and recent tracks and droppings were abundant.

The May browse reading showed that approximately 14% of the control row remained untouched.

### **Results:**

All untreated as well as treated seedlings within the test rows were evaluated for browsing and were included in the calculations. For this reason, the percent gain shown does not reflect the true level of protection provided to seedlings that actually received treatment only the relative effectiveness of each product.

All products appeared to have some positive repellent effect compared to the control row. The "smell repellents" Deer Off, Plantskydd, and Hinder appear to be more effective than the "taste repellents" Tree Guard and Thiram. This tendency may be the result of the design of the project. Deer need to actually bite a seedling for a "taste repellent" to be effective. The small seedling size of the jack pine needed only one bites-worth of material removed to be read as "heavily browsed" (#2). Once this was removed there was

little left for further browsing and any repellent gain would be lost. Also, the untreated seedlings around those treated with a "taste repellent" would do nothing to discourage feeding in that area. Treating larger size seedlings or all of the seedlings in an area may increase the level of protection from "taste repellents" because it brings the memory of the bad taste into play. "Smell repellents" on the other hand, would tend to stop the deer from taking that first bite and may have helped to protect untreated seedlings nearby.

## Discussion/Recommendations:

Application of commercially prepared deer repellents is potentially a solution to localized heavy browsing in reforestation plantations, especially for protection of small seedlings during dormancy. Both "smell" and "taste" repellents can be effective depending on the situation. In general, "smell repellents" are less persistent especially in wet and warm conditions than "taste repellents" and need to be reapplied more often to remain effective. Application costs using sprayers is comparable to applying any pesticide and can use the same equipment. Further tests are planned to help to refine effectiveness of spray applied repellents and evaluate new products. Several other repellent studies are being conducted across the state, so stay tuned for further updates.

Note:

*State statute and DATCAP have ruled that repellents are considered pesticides. As such, applicators for hire need to be certified and licensed. EPA requires registration of repellents under FIFRA. In all cases label instructions should be followed. Mention of repellent or other commercial products in this article does not constitute endorsement. Before application, please be aware of the precautions of each repellent. The ammonium based systemic repellents can affect some conifers.*

## DEER REPELLENT PROJECT FOR USE ON CONIFERS OVER WINTER

### List of materials

Product name	Unit	Cost/Unit	Active Ingredient	EPA Registration Number	Mode of Action	Percent of Unbrowsed Seedlings
Deer Off	Gallon	\$101.50	Putrescent whole egg solids, Capsaicin, garlic	67356-1	Conc. Lasts 3 months, www.havahart.com, 1 gallon makes 8 gallons of mix	25.90%
Tree Guard	2.5 Gal	\$18.99/qu \$95.00 / gallon	Bitrex (Denatonium benzoate)	6676-1	Liquid Season long protection, Beaker Underwood Inc.	17.90%
Plantskydd	2.2 lbs	\$38.50	Dried blood 99.84%, Veg oil	Exempt from FIFRA	Soluble Powder-400-600 plants-6 months over winter, or premixed, www.treeworld.com, 2.2 lbs per 2 gallons	29.00%
Thiram	Gallon	\$47.00	Thiram 42S 42%	400-434-7501	must use with a spreader sticker (plyac), 2qts per 2 gallons mix	18.80%
Hinder	gallon	\$37.99	Ammonium soaps of higher fatty acids 15%	400-383	liquid, 3-5 gallons in 100 gallons per acre for ground spray	21.70%