Chemical Control of Wood Boring Beetles / Larvae

PROBLEM:

Metallic Wood Boring Beetles and their larvae are formidable pests of shade and ornamental trees within the North Texas Cross Timbers Region. Current control measures consist of applying emulsifiable concentrates of DURSBAN at prescribed consumer dilution rates to both trunk and limb wood as a drench. This method is an extension of effective prior controls methods utilizing an alternate chemical: LINDANE. Under our observations, most consumer versions of DURSBAN appear to offer limited control of adult beetles. The product's effectiveness for control of wood boring larvae has been tested on a limited basis, however, no conclusive evidence has been tabulated. Most consumer formulations of DURSBAN are costly to apply in mass, however, they are conveniently packaged and can be readily diluted using ready to use consumer appliances such as "hose-end" sprayers. Sanitation is key to effective control. All trunk and limb scars need immediate tracing, disinfection with a water/bleach mixture prior to application of the control chemical. Landscape trees such as RED OAK, CREPE MYRTLE and ASH appear to be the favored target of the insect pest.

OBJECTIVES:

Determine if DURSBAN in retail formulation provides effective control or suppression of adult and separately, boring larvae.

MATERIALS AND METHODS:

At present, several consumer formulations of DURSBAN EC are available. Professional formulations such as DOW ELANCO DURSBAN 50W appear to suppress both the adult and larval pest effectively. Applications need to be applied every 21 days during the calendar months of March through October for effective control.

CONCLUSIONS: From our field tests, it appears that control of wood boring beetles and larvae improves with increasing concentrations of DURSBAN. Further, it was noted that control was increased by spraying DURSBAN on a 21 day interval between sprays. This methodology possibly increases trunk wood absorption of the active ingredient.

Although unproven, full strength applications of DURSBAN appear to effectively suppress wood boring larvae, if injected with a large hypodermic syringe in close proximity to exit holes and applied as a drench covering all trunk wood up to the first branch level. A covering of clear plastic kitchen wrap or "Saran Wrap" has been utilized to seal the truck wood beginning at the first branch level and down to the root flare. The clear wrap is then seam sealed with masking tape. The intention is to create a sealed killing "chamber" in which the active chemical is aspirated or contacted by larvae. We theorize that some of the active chemical is absorbed through the other bark layer in to cambial wood as well. At present, our control tests remove the clear plastic layer after ten days. Repeated sprays at the consumer recommended dilution rates appear to eradicate browsing adult beetles thereafter. Prior chemical treatment with ETHYLENE DICHLORIDE proved most effective for control of wood boring larvae; however, the chemical is no longer available to the consumer or professional user. No phytotoxicity of the host trees has been observed, however, low-pressure applications limiting foliage contact have been strictly administered. The possibility exists for increasing the number of full strength Consumer product applications to affect a greater percentage of Wood Boring Larval control.

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Technical References-Arboriculture

Remedial Care Recommendations for White Oak, Dogwood and other hardwood trees affected by SUNSCALD

Newly cleared Native timber stands are prone to Sun Scald injury, particularly on the Southwestern side of tree. Reflected heat from paved surfaces and water reflection accentuates this affect. Once a tree has this injury, the tree is weakened and secondary problems quickly occur. There is no way to "heal" the scalded bark tissue other than to minimize secondary problems such as attack by wood boring beetles. Flat headed Borers such as the Bronze Birch Borer will infest Oaks and other hardwood trees exhibiting stress symptoms. Once a population of wood boring beetles builds up, "there goes the neighborhood", so to speak. Wood boring beetles quickly move on to healthy trees. The entire Northern Texas region including your area has an especially large population of wood boring beetles due to low moisture conditions.

To minimize Sun Scald injury during future clearing work , you may utilize chemicals such as LINDANE as a preventative along with placing light barriers on thin or light colored bark trees. Place light barriers on the southwestern side only. During the months of May through October, you should spray the lower limbs (not the foliage) and all trunk wood with a coarse, low pressure spray starting high and working downward allowing the mixture to puddle at the base of each tree. Wood Boring Beetles will lay eggs on cycles of every 21 days during May through October under typical weather patterns. Obviously, unless you are watching for adult beetle activity, you won't know exactly when to begin spraying. Therefore, we recommend a preventative wood borer spray EVERY 30 Days during the same period.

The product called Ethylene Dichloride (Fertilome Retail Label Name: "Borer Killer") was an effective ERADICATING chemical since it acted as a bark penetrant. Unless you happen to find this product in someone's old inventory, it is no longer available (EPA pulled it). As far as we know, no other chemical companies offer an ETHYLENE DICHLORIDE product. If you can find one, let us know! This limits your options to PREVENTION only. Once Wood Boring larvae are feeding within the tree, you cannot eradicate them. When they emerge as adults, then your chemical control might be effective. We recommend using DURSBAN 50W with a spreader-sticker such as:

Crown Line Products Thoroughbred* Thoroughbred Organosilicone Surfactant is a unique technologically advanced adjuvant which spreads quickly providing uniform coverage and increased penetration through the leaf's waxy cuticle. With Thoroughbred's rapid spreading and penetration action it offers "Stomatal Flooding" which means the pesticides move directly into the plant leaves through the stoma allowing more effective uptake of the actives without plant damage. This unique type of activity decreases washoff and ultra-violet degradation.

available in water soluble packets. Please refer to our applicator's guide for dispersal.

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Wood Boring Beetles and Larval Destruction

POST PLANTING PROCEDURES TO REDUCE WOOD BORER INFESTATION

Check the moisture level within the soil at a depth of 4-6" prior to each irrigation period. If the young trees are staying saturated at this depth, then oxygen will be quickly excluded and root death will occur. Obviously, this also weakens newly planted trees. For young tree establishment, it is best to water heavily and then allow the soil to dry before watering again. This practice preserves capillary action allowing oxygen to be drawn into and through the root ball area. There are some chemicals available that foster the development of soil bacteria (micro flora) and the proliferation of Mycorrhizae, both of which are vital to tree growth. Trees often fail because Mycorrhizae is not present with the roots of trees due to disturbed soil conditions. (Myco means fungus and rhiza means root). They are simply root structures created when young lateral roots are invaded by specific fungi. A symbiotic association begins and the long term relationship (you scratch my back and I'll scratch yours) allows woody plants to grow vigorously and stay healthier. Mycorrhizae increase the ability of roots to absorb water and nutrients. When you are trying to grow a young tree in subsoil and other compacted, low nutrition , poorly drained conditions, every little factor counts!

During establishment, young trees need fertilization. Use products such as general Purpose Miracle Gro or Miller's 20-20-20 water soluble because they both contain micro nutrients. Apply monthly (February - August) at ½ of the rate recommended for established trees. Regular feeding will promote Foliar growth and a deep green color.

Use Drip Irrigation Appliances such as GATOR BAGS to reduce Tree Failure. *Alleviate confusion – DRIP!*

Watering Variables (per tree)	Without Treegator®	With** Treegator®
Watering Frequency (per week)	3 times each tree/per week	2 times each tree/per week
Watering Duration (each tree/per visit)	10-15 mins. (rootball saturation not guaranteed)	1-2 mins. (complete saturation is guaranteed)
Watering Labor Cost (per visit*)	$1.50 each tree/per visit	$0.56 each tree/per visit
Watering Labor Cost (per month=4 wks.)	$18.00 each tree/per month	$4.48 each tree/per month

*with employee pay @ $6.00 per hour **cost of Treegator® included

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