



# Throw down the gauntlet against MOUNTAIN PINE BEETLE

By Les Koch

Have the needles on your pine trees turned a yellowish or reddish tinge and are there popcorn-shaped pieces of resin attached to the main trunk (*Photo 1*)?

If so, there is a very good chance your pine trees are infested with mountain pine beetle (MPB). This indigenous bark beetle is no larger than a single grain of cooked rice but is primarily responsible for the vast tree mortality levels in lodgepole, limber, and ponderosa pine forests throughout our region.

Despite the current prolific spread of beetles and ensuing high numbers of tree deaths, there are options landowners can use to protect their forests. The three most common control methods are preventive sprays, verbenone pouches (semiochemicals), and organic disease control or ODC.

## Preventive Chemicals

Applying insecticides annually on the main trunks of healthy, non-infested trees can effectively prevent attacks from bark beetles. Any pine tree with the main trunk measuring 5 inches in diameter or greater is susceptible to attack. There are at least two over-the-counter insecticides specifically formulated for trunk treatments on susceptible trees:

Astro (36.8% active ingredient – a.i.) and Hi-Yield 38 Plus (38% a.i.). The a.i. in these two products is permethrin. Calibrate Hi-Yield 38 Plus at 2 to 4 teaspoons per gallon of water and Astro at 2 to 5 quarts per 100 gallons of water.

Other chemical options include products with the active ingredient carbaryl: (1) Sevin SL (43.0% a.i.), (2) Carbaryl 4L (43.4% a.i.), and (3) Sevin XLR Plus (44.1% a.i.). These products are coded agricultural or commercial use only and therefore **cannot** be purchased over-the-counter. All three need to be calibrated at a 2% solution

(5 fluid ounces per gallon of water). Make certain any applicator you hire is licensed by the Wyoming Department of Agriculture. If you do hire a contractor, ask what is in the tank.

Apply mixed chemicals to the main trunks of susceptible-sized trees no later than mid-June. If late May or early June is uncharacteristically warm, spray trees by early June. To achieve best results, spray the entire stem of

the tree from the ground to the main terminal. This action ensures complete coverage of the main stem against MPB as well as pine engraver beetles (*Ips* spp.) that prefer to attack the upper crown. Spray the first 30 feet of the main trunk (including any branches greater than 5 inches in diameter) from the ground up or when the stem tapers to 5 inches, whichever comes first. Fully saturate the main trunks to reach all of the fissures and cracks in the bark (*Photo 2*). Do not spray foliage. Spray the largest diameter trees on your lot or those within the immediate area of your cabin or house. Do not spray entire acreages of trees. I recommend landowners spray 10 to 15 trees on their properties, but I've seen

some landowners spray hundreds of trees on their lots. Remember, these insecticides are designed for application on healthy, non-infested trees and are **ineffective** on trees already infested with bark beetles.

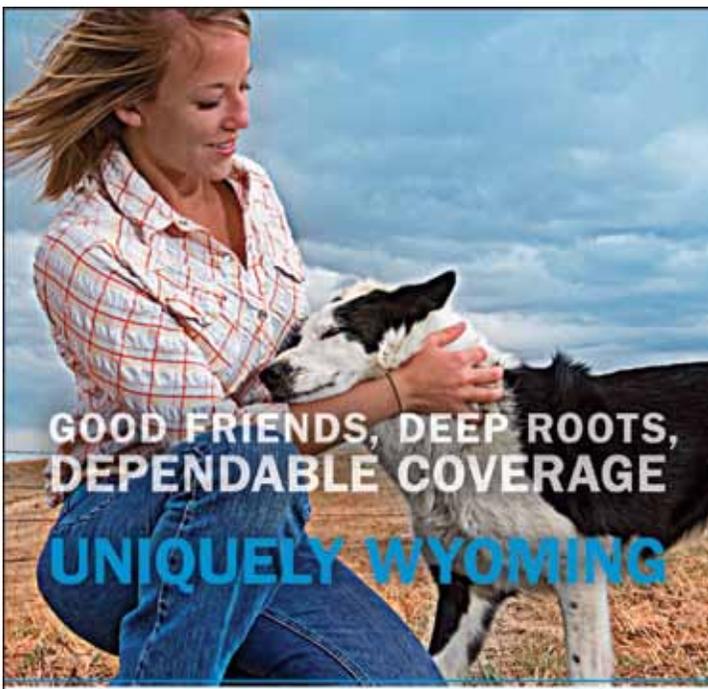
## Semiochemicals

Mountain pine beetles communicate via an elaborate system of semiochemicals (chemical substances emitted by insects); these chemicals enable populations of beetles to find mates and subsequently attack host trees.



*Photo 1. MPB pitch tubes*





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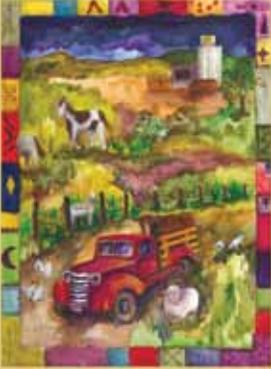
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The specific semiochemical in question, verbenone, is now synthetically manufactured in small, credit-card sized pouches (*Photo 3*).

These pouches emit verbenone much like an air freshener; verbenone pouches trick invading beetles into thinking the host trees in the protected area have already been infested by MPB and there is “no room left at the inn.” Deploy pouches no later than mid-June at a rate of 30 per acre in a grid-like pattern or in a pattern that masks the shape or outline of the forest needing protection. Success has been measured in research field plots, but our experience has shown that MPB still inflicted high attack rates in treated lodgepole pine stands – even on trees with attached pouches.

Pouches last one flight season so new ones need to be applied every year.

### Organic Disease Control

A relatively new product is Agrihouse Organic Disease Control (ODC). ODC is applied to the soil around the base of a tree and has shown to increase resin flow in pine trees. Increased resin flow enables host trees to defend themselves more effectively against attacking bark beetles by either pitching them out when they initially burrow into the bark or stopping them during gallery construction under the bark (called

“pitch-in”). The Wyoming State Forestry Division has never used this product and to date no studies have documented this product’s effectiveness on MPB in lodgepole or ponderosa pine. Moreover, Agrihouse has not used this product on a landscape scale; in other words, no work has been done to show this product can decrease bark beetle attacks in a forest setting. Individual tree protection might be more applicable for this product as things look now. While I do not discourage the use of this product, I cannot specifically recommend it until a track record has been established as to its effectiveness.



*Photo 3. Verbenone pouch on lodgepole pine*

## Forest Management

Lost in much bark beetle dialogue has been traditional forest management, *i.e.*, silviculture. Generally speaking, forests are overcrowded, which has led to weakened trees – rendering forests more susceptible to bark beetle attack. Silviculture is the option that needs more emphasis. Landowners are usually somewhat skeptical because they are reluctant to remove green, healthy trees; however, a thinned forest is not only less susceptible to bark beetle attack in the long-term, but it is also less prone to catastrophic wildfire since the fuel loading has been decreased.

Ultimately, the best option is an integrated approach using a variety of treatments. Don't like to cut green trees? Go with preventive spraying around your cabin or structures and apply verbenone pouches. If you choose to thin your forest, applying pouches and spraying a few trees per acre is a good idea.

Regardless of which alternative you choose, I cannot overemphasize the importance of vigilance. Survey properties a minimum of twice a year; once during spring (when MPB emerge) and then again in late summer (when MPB attack) leading into early fall.



Photo 2. Preventive spray application on lodgepole pine

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