



South Dakota Cooperative Extension Service

Insecticides for Protecting Pine Trees from Mountain Pine Beetle

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The mountain pine beetle (*Dendroctonus ponderosae*) is a pine bark beetle native to the Black Hills and much of western North America. The Black Hills has experienced landscape level outbreaks of mountain pine beetles beginning in the late 1990s with the losses now totaling into millions of trees. Many homeowners are concerned that the ponderosa pine trees in their yard or acreage may become infested by this beetle. This bulletin will answer some of the most common questions regarding protecting individual trees from becoming infested. Identification of mountain pine beetle infested trees is addressed in a separate bulletin.

WHAT IS THE MOUNTAIN PINE BEETLE?

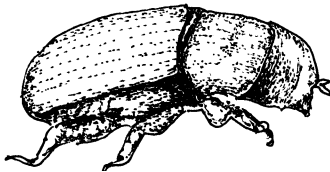


Figure 1. Mountain pine beetle adult (not to scale).

The mountain pine beetle is a small insect that lives most of its life just beneath the bark of living pine trees. The adult beetles (figure 1) are black to rusty brown and about 1/5- to 1/3-inch long, about the size of the lead point of a pencil. They emerge from dead trees beginning in early to mid-July. The emergence reaching its peak near mid-August, though some beetles continue to fly into mid- to late September. The adults burrow into living pines and construct tunnels, known as galleries, just beneath the bark in which to lay eggs. The eggs begin to hatch in late summer and the yellowish white, legless larvae (figure 2), about the size of a rice grain, feed within the inner bark of the tree until the following spring. In late spring they begin to pupate, a resting stage, for several weeks before becoming adults. The adults will often remain beneath the bark for a short time period before they begin to emerge in large numbers from the now dead host tree and seek a new living pine tree to begin the cycle again.



Figure 2.
Mountain pine
beetle larvae
(not to scale).

HOW TO PROTECT INDIVIDUAL TREES FROM BECOMING INFESTED WITH MOUNTAIN PINE BEETLE

There are no effective systemic pesticide treatments that will kill the adults or larvae inside the tree. Pesticide treatments are limited to protecting trees from becoming infested. These treatments are applied to the bark to kill the adult beetles as they land on the trunk and begin to burrow into the tree. This method of protection is highly effective and, if the pesticides are applied at right time and location on the tree, losses may be as few as one or two trees for every hundred trees treated. However, only trees that are not infested should be treated. To be sure your trees are not already infested see the companion bulletin *Identification of Mountain Pine Beetle Infested Trees*. If a tree is already infested, pesticide application will not prevent the beetles from emerging and infesting other trees.

Pesticide treatments are an effective way protecting a small number, usually 20 or fewer, high-value pine trees from mountain pine beetle. If there is mountain pine beetle activity in the generally area near the home, within several miles, protecting trees from possible attack may necessary. Generally it is more effective for homeowners to hire a commercial applicator with the experience and equipment to properly treat and protect the trees. If homeowners prefer to treat their own trees, the following are some guidelines to consider.

Pesticides to use

The pesticides that are most commonly used and labeled for bark beetle control have carbaryl (commonly sold as Sevin in various formulations) or permethrin (commonly sold as Astro in various formulations) as their active ingredient. There are products containing either of these active ingredients that are not restricted use so may be applied by homeowners however the *specific product purchased must be labeled for bark beetle control*. There are garden products of these pesticides that are not formulated for bark beetles and these will be ineffective.

When to treat

The pesticides currently available are only effective for preventing a successful attack by the mountain pine beetle so they must be applied before the beetles begin to emerge in the summer and seek new hosts. We recommend that the application be applied during the month of May. This is sufficiently early enough to ensure that the beetles may not have already attacked the tree and are now inside the bark and protected from the pesticide. The application will only be effective for that season so trees that are in an area with mountain pine beetle activity must be treated every May to continue protection. Also do not spray if there is a threat of rain within six hours of application.

How to apply

The bark of the trunk must be treated so that is thoroughly wetted with the pesticide just to the point of runoff, merely misting the trunk will not allow for penetration of the pesticide into the bark fissures and cracks. The pesticide should be applied completely around the trunk from the base to a point where it tapers to a diameter of 3 or 4 inches. Homeowners attempting to treat their own trees should be sure that their sprayer has sufficient pressure to wet the upper trunk of their trees. A hydraulic sprayer with at least 250 psi is needed for small trees, those that are less than 25 feet tall, while 400 psi or more is required to treat tall trees, those over 50 feet.

IMPORTANT CONSIDERATIONS

Homeowners considering treating their own trees are cautioned to be use the proper equipment and only applied pesticides that are labeled for use for this purpose. Applications must not exceed labeled rates. Homeowners should read and follow all precautions and safety recommendations provided on the pesticide container label. Homeowners may not treat trees that are not on their property unless they are a certified applicator. Contact the South Dakota Department of Agriculture Division of Agricultural Services for more information. Any treatment recommendations, including those identifying specific pesticides, are for the convenience of the reader. Pesticides mentioned in this publication are generally those that are most commonly available to the public in South Dakota and the inclusion of a product shall not be taken as an endorsement or the exclusion a criticism regarding effectiveness. Please read and follow all label instructions and the label is the final authority for a product's use on a particular pest or plant. It is the reader's responsibility to determine if they can legally apply any product identified in this publication.

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