When to Apply MCH

Bubble capsules should be applied before beetle flight. This is generally mid-late April for lower elevation sties. In high elevation sites over 7000 feet elevation, DFB life cycles vary with adult flight beginning as late as early June. Bubble capsules in these high elevation sites should be placed by mid-May or as soon as sites are accessible.

MCH bubble capsules are effective for one season and must be replaced annually. Bubble caps should not be removed before September.

Additional Considerations

Ensure the insect in areas where MCH is deployed is DFB, if uncertain see the Forest Health Protection contacts listed in this brochure. Although MCH may be useful in meeting short-term resource objectives a vegetation management plan is recommended for recreation and administrative sites to address changing stand conditions to lower susceptibility to DFB long-term.

MCH is currently registered as a bio-pesticide for forestry applications by the Environmental Protection Agency (EPA). Unlike conventional pesticides that kill insects, MCH is a biological pesticide that affects DFB (beetle) behavior. Always follow these procedures when deploying MCH; wear appropriate Personal Protective Equipment when handling MCH bubble capsules, obtain a Job Hazard Analysis prior to use, and follow label directions. Completion of a pesticide use proposal (PUP) is required for all applications of pesticides, including MCH, on National Forest lands.

For additional information, contact any USDA Forest Service or State Forestry Office in your area. More MCH bubble capsule information is available at: http://www.fs.fed.us/foresthealth/technology/pdfs/MCH_online.pdf

USDA Forest Service Forest Health Protection:

Missoula Field Office
406-329-3637

Coeur d'Alene Field Office
208-765-7342

Ogden Field Office
801-476-9720

Boise Field Office
208-373-4227

Montana Department of Natural Resources
406-542-4283

Idaho Department of Lands
208-769-1525

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UNITED STATES DEPARTMENT OF AGRICULTURE FOREST SERVICE NORTHERN AND INTERMOUNTAIN REGIONS

Using MCH Releasers to Protect Trees from Douglas-fir Beetle

Introduction

MCH (3-methylcyclohex-2-en-1-one) is a biochemical pesticide that can be used as a short-term treatment to protect individual Douglas-fir trees or stands from Douglas-fir beetle (DFB) attack. DFB naturally produces MCH after ingesting tree terpenes as an anti-aggregation pheromone to disperse adult beetles away from an attacked tree to prevent overcrowding.

MCH has been artificially synthesized and packaged into slow-release bubble capsule releasers (often referred to as MCH bubble caps) and a flake form. The flake form is most appropriate for use on larger landscapes where site accessibility may be an issue. Land managers may deploy bubble capsules as an area-wide or individual tree treatment to protect non-infested Douglas-fir trees.

MCH is only one component of an Integrated Pest Management (IPM) program and will only provide short-term protection. Additional IPM activities should be implemented to promote long-term resilience to DFBs. IPM activities could include removing or burning infested trees, thinning to encourage size class diversity, and monitoring beetle activity until beetle pressure subsides. To enhance treatment effectiveness, follow the recommendations listed below.

Where to Apply MCH

There are several insects that can kill or damage Douglas-fir trees. Identifying DFB is an essential step in successful application of MCH. Douglas-fir trees that have been attacked by DFB have several key features. Infested trees cannot be protected using MCH; only trees not successfully mass attacked will be a viable option for MCH use.

Copious amounts of orange-red boring dust in bark crevices is the best indicator of DFB-attack. Boring dust around the entire base of an attacked tree indicates a successful DFB-attack (often referred to as "mass-attacked"). Beneath the bark of trees with boring dust, beetles and galleries can be used to properly identify DFB presence.

In later stages of beetle development or after beetles have emerged, the crowns of infested Douglas-fir trees will take on a red appearance as the tree dies and needles fade.

MCH has been successful as a single tree treatment or as area treatments from <1 acre to 500 acres. MCH treatment is appropriate for any tree or site where DFB-caused tree mortality could significantly impact high value trees and/or affect resource management objectives.

MCH is a short-term treatment, applied annually until beetle populations subside.

How to Apply MCH

Individual Tree Treatment

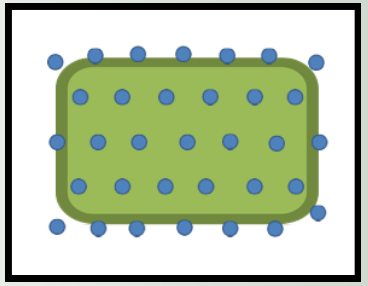
To protect individual high-value trees, apply 2 MCH bubble capsules per tree if diameters exceed 12 inches DBH. Bubble capsules should be placed on the northeast and northwest sides of the tree at approximately six feet above the root collar and higher in campgrounds and recreational areas to prevent bubble capsule removal.

For trees larger than 24 inches diameter-at-breast –height apply additional capsules, one for each additional 12 inches up to a maximum of 4 per tree on each aspect of the tree bole. Bubble capsules should be stapled through the thin plastic strip that extends above the bubble cap, do not pierce the bubble containing the MCH. During an outbreak, trees 20 inches or larger will be preferentially attacked so they should be preferentially treated to reduce impacts.

Area Treatment

To protect stands of susceptible trees from DFB-attack, MCH should be applied at a rate of 30 bubble capsules per acre (38-foot spacing). For area treatments, staple one capsule on the north face of the tree bole. If the area is under 100 feet wide and does not allow for at least 3 grid lines of MCH, individual tree treatment should be used.

If a Douglas-fir tree is not available at the proper spacing, MCH can be placed on any vertical object including snags, high stumps, or other tree species. If trees are widely scattered throughout an area, or if only a few trees are to be protected, apply bubble capsule as an individual-tree treatment.



Total acreage to be treated = 2 acres

Rate applied = 30 bubble capsules per acre

Total number of bubble capsules = 60

Spacing = 38 feet between bubble caps