Using Synergy Shield MCH to protect Douglas-fir trees against Douglas-fir beetles (*Dendroctonus pseudotsugae*) and Spruce trees against Spruce beetles (*Dendroctonus rufipennis*)

What is MCH

Bark beetles rely on semiochemicals to find suitable mates and trees to colonize. Once a suitable tree is selected and the female beetle bores into the bark, powerful pheromones are released which draws in many more males and females. Once mated, females produce much less of the attractive pheromones and males begin producing MCH. As more mating pairs colonize under the bark, the growing plume of the emitted MCH changes the signal from being attractive to repulsive. A high concentration of MCH lets flying beetles know the tree is already full to capacity, almost like a 'no vacancy' sign and the mass attack ceases. This is the natural mechanism beetles use to avoid overcrowding under the bark.

MCH products have been commercially produced since 1992. Loaded into a small plastic membrane, commonly called 'bubbles', MCH diffuses through the plastic membrane and is released into the surrounding area much the same way as if they were released by male beetles. Arriving beetles are then tricked into moving on to find another location.

Where to use

MCH deters mass attack in tree stands and protects susceptible trees. MCH can be used on Douglas-fir and Spruce trees. It is suitable to use in stands containing significant numbers of trees whether standing, fallen or stumped. Unlike traditional pesticides, MCH is produced by the beetle and has very little impact on the environment and is safe to use almost anywhere. It is perfect for use in forests, parks, campgrounds, golf courses, recreational areas and properties, ornamental and shade trees in suburban areas, rights of way or other easements, and residential properties bordering wild areas.

MCH should not be applied directly to streams, lakes, ponds or any body of water.

Synergy Shield MCH

Previously only available in a dosage of 400mg per bubble, Synergy recently registered two new MCH products with EPA, a new 1000mg double bubble and a higher dose 500mg single bubble. Based on research, 50% fewer point sources with twice the release rate may be used to provide the same level of protection as a single bubbles spaced more widely. Instead of 40 per acre, 20 MCH Shield Doubles are now the recommended dosage, saving application time and money. Our double bubble and the 500mg Synergy Shield MCH single bubble lasts at least two weeks longer than a standard 400 mg bubble. Longer release times provide an extended window for early deployment and for insurance in the event of an extended flight period. The double bubble is simply more efficient to manufacture and use and we are passing these savings on to you.

Synergy Semiochemicals Corp.
Phone: 604-454-1122 Email: synergy@semiochemical.com
www.semiochemical.com

APPLICATION RATES FOR SYNERGY SHIELD MCH **SINGLE (500mg) BUBBLES**

Individual trees and areas 1 acre or less:

1. Place 2 to 4 Synergy Shield MCH on each tree, depending on risk of attack and size of tree.
2. For large trees over 24 inches diameter, add 1 more Synergy Shield MCH for each additional 8 inches in diameter, 3 feet above the previous Synergy Shield MCH.

Forested stands over 1 acre:
1. Place 40 Synergy Shield MCH/acre. For low to moderate beetle pressure, place 1 Synergy Shield MCH/tree in a grid pattern with 32 foot centers*.
2. For high beetle pressure, place 1 Synergy Shield MCH/tree in a grid pattern with 23 foot centers*.
Maximum dose – 80 Synergy Shield MCH/acre.

When and how to apply

MCH is most effective when it is applied two weeks before Douglas-fir beetles begin to fly and attack trees in the spring. This is usually in late April or early May in the Pacific Northwest and northern Rocky Mountains. However, it is still effective in reducing further attacks even if deployed later in the season. Douglas-fir beetles will not take flight until the air temperature is at least 65°F (18°C). The amount of MCH released is also temperature dependent; the warmer the air, the higher the release rate. The wind speed and direction determines where the pheromone plume will go. It is also important to note insects can only 'sense' these chemicals from a downwind position. Use the wind factor to your advantage, if possible.

Staple to the north side of the tree, as high as you can reach using a stapler or small hammer. It does not matter if the bubble part is facing against the tree or not. There is evidence that beetles prefer the north side as they are not in direct hot sunlight and are shaded from predators.

DO NOT PUNCTURE RESERVOIR!! Doing so will release the MCH immediately. The plastic membrane is a special plastic that allows the MCH to release into the area slowly.

Synergy Semiochemicals Corp.
Phone: 604-454-1122 Email: synergy@semiochemical.com
www.semiochemical.com

APPLICATION RATES FOR SYNERGY SHIELD MCH **DOUBLE (1000mg) BUBBLES**

Individual trees and areas 1 acre or less:

1. Place 1 or 2 Synergy Shield MCH on each tree, depending on risk of attack and size of tree.
2. For large trees over 24 inches diameter, add 1 more Synergy Shield MCH for each additional 8 inches in diameter, 3 feet above the previous Synergy Shield MCH.

Forested stands over 1 acre:
1. Place 20 Synergy Shield MCH/acre. For low to moderate beetle pressure, place 1 Synergy Shield MCH/tree in a grid pattern with 46 foot centers*.
2. For high beetle pressure, place 1 Synergy Shield MCH/tree in a grid pattern with 32 foot centers*.
Maximum dose – 40 Synergy Shield MCH/acre.

*'Centers' means from the center of one tree to the center of the next.

Useful tips:

1. Rule of thumb: Place Synergy MCH Singles 20-25 feet apart, and Synergy Shield Doubles 40-50 feet apart;

2. If you plan on using MCH from one year to the next in the same location, clip a corner so you can tell which ones are from last year;

3. Keep unused MCH in an airtight container (glass canning jars or a metal paint can with tight lid are perfect), in the freezer for use next year;

4. For best results it is critical to remove infested trees off site well before beetle-flight;

5. If possible keep your trees well watered.

Saving trees naturally with semiochemical based products is our business. Along with knowledgeable staff, state of the art production equipment, and the most up to date research, we can offer you the best product for the best price. If you have any questions about MCH or any of our products we would be more than happy to help you. Send us an email, phone us at 604-454-1122, or go to our website: **www.semiochemical.com** We look forward to hearing from you, and during business hours we always answer our phone.