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Western Spruce Budworm Control Program

Who: Northwest Management, Inc. (NMI) is a natural resource consulting firm specializing in all aspects of forest land management. NMI was established in 1984 and operates from offices in Helena, MT; Moscow, ID; and Colville, WA. Our professional forestry staff has extensive training and experience in insect and disease management. For more than a decade, NMI has coordinated with experienced pilots to provide aerial spraying services for control of western spruce budworm.

As the first step in a comprehensive control program, an NMI forester will evaluate your property to determine the impact of western spruce budworm on the health and condition of your forest. The forester can then explain options for short and long-term management solutions. Aerial spraying is a proven, effective method for controlling western spruce budworm populations during active infestations. NMI foresters can provide a total project cost if spraying is the best solution for your forest health concerns.

What: Western spruce budworm is a native forest insect that feeds primarily on Douglas-fir, subalpine fir and western larch needles and buds. The larval (caterpillar) stage begins feeding as buds flush and new needle growth emerges in June and early July. Larvae will develop through 6 instars before pupating. Larvae colors can vary widely from orange-brown to olive-brown and light tan. The adult stage is a small, tan colored moth that can be seen flying around tree tops in July and August. Larval feeding defoliates the tree. The adult moths do not feed on tree foliage.

Why: The objective of aerial spraying is to retain as many needles on the tree as possible by stopping the feeding activity of the western spruce budworm larvae. Retaining needles

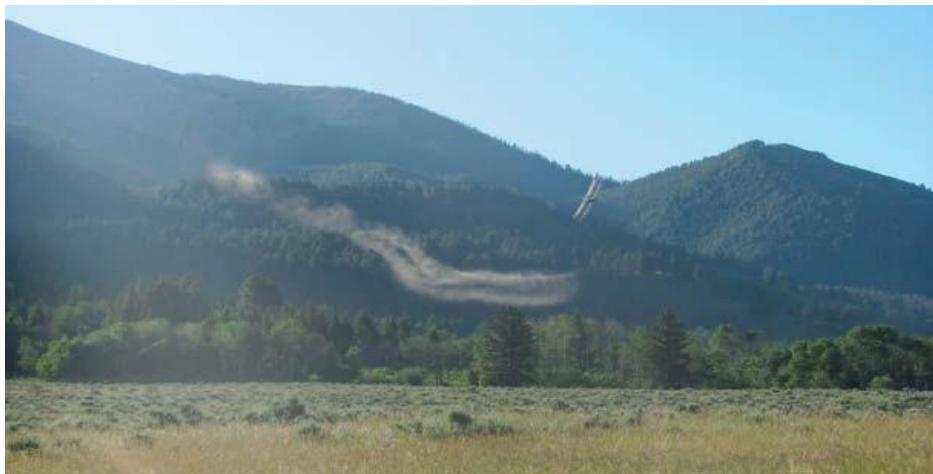
Landowner

Precautions:

As a precaution we ask that people and pets stay indoors while spraying is in progress and avoid entering sprayed areas for a period of 4 hours. Livestock can be startled by low flying aircraft. If you or your neighbors have livestock, precautions should be taken to avoid problems that might result from startled animals. We request that you notify your neighbors in advance of spraying as a courtesy. Aircraft fly just above tree top level during application.



helps trees to maintain their vigor and health. Repeated years of moderate to severe defoliation will weaken trees and increase their vulnerability to other pathogens such as the Douglas-fir beetle. In severe circumstances trees can be killed by western spruce budworm.



More about Foray 48B:

Foray 48B has been certified as organic by the Organic Materials Review Institute (OMRI). OMRI is a national nonprofit organization that determines which inputs are allowed for use in organic production and processing. OMRI approved products may be used on operations that are certified organic under the USDA National Organic Program.

NMI foresters can provide additional information such as Foray 48B label literature and Material Safety Data Sheets upon request.

More about Western Spruce Budworm Control with Aerial Spraying:

An organic biological insecticide called Foray 48B is commonly used to control western spruce budworm. The active ingredient is a bacterium (*Bacillus thuringiensis* var. *kurstaki*, or B.t.k.) that is toxic to feeding budworm larvae for 1-3 days before it is naturally broken down by sunlight. Susceptible larvae that ingest Foray 48B cease feeding within a few hours. It will take a period of 2-5 days for the larvae to die and fall off the trees. Monitoring will occur after spraying to determine how well the spruce budworm larvae population has been diminished. ***It is important to note that because budworm larvae must be feeding to ingest the Foray 48B, trees will experience some level of defoliation before spraying occurs.*** Feeding will cease shortly after trees are sprayed.

Spray timing is critical to the success of a budworm control aerial spraying project. NMI foresters evaluate foliage development, insect larvae development and weather conditions in the weeks leading up to spraying to determine the most favorable time for application. NMI will coordinate with aircraft pilots to ensure that environmental conditions are optimal for budworm control.

Most spraying is conducted in the early morning hours between day break and mid-morning. Spraying is completed with a helicopter flying just above the tree tops by a licensed and insured pilot with a commercial applicator license. Properties up to several hundred acres are usually sprayed in less than an hour. Smaller properties (less than 40 acres) can be completed in a few minutes. NMI foresters will visit the property approximately one week after spraying to evaluate the success of the project.

Billing: A down payment of 20 percent of total project cost is due at signing, NMI will mail an invoice upon final inspection of the spraying project to the billing address you provide.

In over a decade of use, NMI has found Foray 48B to be a safe and efficient means of limiting the impacts of active infestations of western spruce budworm. However, it is important to understand that while results are generally very good in terms of curbing needle loss and reducing larval populations, the outcome of a spraying project can be significantly influenced by environmental factors beyond our control. For this reason, it is necessary that we invoice the full amount on each completed project. Our foresters and contracted pilots make every effort to ensure your spraying project is completed safely and professionally.