



MOSS ON ROOFS: PESTICIDE-FREE CONTROL

In the Pacific Northwest, we cherish every shade of green. From our lush, fir tree forests and endless grassy pastures to our sustainable practices ethos, we are green. But there are times when greenery can be a nuisance and even destructive. Moss is an important part of ecosystems, but on a roof, moss growth can destroy cedar and shingled roofs. And moss control products can be harmful as they leach into the environment, and impact water quality and the food chain.

Moss are resilient leafy nonvascular plant known as Bryophyta that have no roots, so they can't take up water from soil as many plants do. They soak up and store water and need flowing water in order to thrive.¹ The stored water can seep under shingles and through the roof underlayment and sheathing, the protective material between the singles and the roof deck. Waterlogged roofing material can lead to unhealthy growths of mold, rot, compromised structural integrity, and costly repairs.² In dry conditions they are inactive, but quickly recover when water is available.

Preventing Moss

Since moss likes shade, moisture and a lower pH, amending any of these can help. Moss also needs a substrate on which to attach. Dirt or particles on roofs can create places for moss to start growing, so the primary preventative is to sweep or blow off your roof once or twice a year (when dry) to remove leaves, twigs and any dirt particles.^{3,4} Don't forget to trim any overhanging tree branches to reduce shade and falling leaves and needles. While conducting this work, look for early signs of moss growth, indicated by green or black discoloration.

After blowing and cleaning, baking soda can be used at the ridgeline and on early developing moss in late summer. Baking soda will raise the pH, which prevents moss from growing. While baking soda has not been approved for moss treatment, university studies have found it useful for spot treatment.⁵

Treating Moss

For treatment, use baking soda when rain is minimal and allow several weeks for the moss to die. Products containing d-limonene (citrus oil) are also effective at killing existing moss. Results are usually seen in 2-3 days.⁶ With either treatment method, some moss will slough off naturally as it dies. Gently remove the rest with a wire or nylon brush, sweeping in a downward motion to avoid damaging the shingles.

Among the products to use with caution are zinc, potassium salts of fatty acids and oxidizing bleaching agents that do not contain chlorine. Zinc strips can be installed at the top of your roof to prevent moss growth. As rain runs over the strips, zinc drips down your roof. Zinc is toxic to aquatic animals at higher exposures.^{7,8} Zinc sulfate is a severe eye irritant, has increased the frequency of miscarriages in laboratory studies with pregnant animals and has caused genetic damage in bacteria, fruit flies, and human cell cultures.⁹ NCAP does not recommend zinc products as a first option.

Products containing potassium salts of fatty acids can be an effective option for moss treatment, but this ingredient is known to be toxic to aquatic invertebrates. Oxidizing bleaching agents that don't contain chlorine are usually based on peroxides such as hydrogen peroxide, sodium percarbonate and sodium perborate. Tests appear incomplete on some of these products, but these oxidizing agents are considered slightly hazardous to water. If you choose either of these, we recommend applying in the dry season to reduce chemical runoff. Additionally, disconnect your downspouts during the application and cleaning process, to allow the water a chance to infiltrate into the soil before reaching streams. Or, catch gutter runoff in a bucket and flush the waste down a toilet.

The best way to avoid costly repairs is to maintain a moss-free roof, which can be accomplished through cleaning as little as once or twice a year. Treating a mossy roof can be more time consuming, but can be accomplished with the right tools. Use our flowchart on the back as a summary of steps.



1 Richardson, D.H.S. 1981. The biology of mosses. New York: John Wiley and Sons. Ch. 1,2.

2 Oregon State Univ. Extension. 1998. Moss—'Tis time to control green slimy stuff on roofs, decks. O.S.U. Extension and Exp. Sta. Communications, Corvallis OR, Feb. 6. <http://eesc.orst.edu/agcomwebfile/garden/Weeds/greenslimyroof.html>.

3 Personal communication, Ross Penhallegon, Lane Cty (OR) extension agent, Jan. 24, 2001.

4 Niemeck, S.S. and T.D. Brown. 1993. Care and maintenance of wood shingle and shake roofs. Corvallis OR: OSU Extension Service, Sept.

5 <http://plantscience.psu.edu/research/centers/turf/extension/factsheets/moss-putting-greens>

6 <http://mossmelt.com/hard-surfaces-roof-moss/>

7 U.S. Dept. of Health and Human Services. Public Health Service. Agency for Toxic Substances and Disease Registry. 1994. Toxicological profile for zinc, May. p. 2.

8 National Research Council. Assembly of Life Sciences. Div. of Medical Sciences. Committee on Medical and Biologic Effects of Environmental Pollutants. Subcommittee on Zinc. 1979. Zinc. Baltimore MD: University Park Press. p. 77.

9 U.S. EPA. Office of Prevention, Pesticides and Toxic Substances. 1992. Reregistration eligibility document (RED): Zinc salts. Washington, D.C., Sept. p. 9.

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Use this flowchart to choose the option that's right for you

PREVENTION

TREATMENT

