ORNAMENTALS NORTHWEST ARCHIVES

Jan.-Feb. 1988
Vol.12, Issue 1
Pages 7-8

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CONTROLLING MOSS IN LAWNS

Introduction

Lawn mosses are common throughout Western Oregon. Moss growth normally starts with fall rains and reaches a peak in early spring. Because grasses grow poorly in winter, mosses are able to invade and often dominate lawns in only a few months. Moss growth declines in summer as conditions become drier and turfgrass growth increases. Under shady irrigated conditions moss may grow through summer. Moss can tolerate long periods of drought in a dehydrated condition and rehydrate and grow with the onset of fall rains. The persistent and recurring nature of lawn mosses is largely due to our mild temperatures and the wet-dry nature of our climate.

Even though it has long been a significant lawn pest, surprisingly little is known about the types of moss found in turf. Worldwide only about a dozen species have been identified. In Oregon, *Rhytidiadelphus sp*. and *Brachythecium albicans* have been identified as frequent components of mossy lawns.

Cultural Control

While moss does occur in well-maintained lawns, severe invasion generally occurs in neglected lawns where poor cultural conditions enable mosses to outcompete turf. Moss encroachment is generally associated with thin turf, low fertility, highly acidic soils, shade, wet soils, and turf injury from insects, diseases, chemicals, or cultural practices. Long term moss control in these situations is impossible unless cultural conditions are corrected. In many cases turf is thin due to lack of fertilizer. Properly timed nitrogen fertilizer applications will increase turf density, vigor, and competitiveness. Late fall and spring are important times to fertilize to minimize moss encroachment. Liming soil to raise the pH to 6.0 - 6.5 will benefit some grasses in the long run but will have no direct effect on moss.

Grasses grow poorly in dense shade due to lack of light and increased disease activity. Shady lawns generally have greater moss problems than lawns in full sun. Thinning out trees by selective pruning or removing trees completely may reduce moss encroachment. In some cases, it is easier to redesign the area and eliminate turf than it is to improve lighting. When planting new lawns in shady sites, be careful to select shade tolerant species. In relatively dry shade, the fine fescues will perform well. In wet shady sites, roughstalk bluegrass will persist better than other grasses.

Wet soils provide a perfect environment for germination and growth of moss spores or plant fragments. Wet soils may be due to poor drainage or excessive irrigation. Poor drainage can sometimes be improved by improving water infiltration via core cultivation, slicing, or thatch removal. These practices also improve turfgrass vigor and competitiveness. In some cases drainage can only be improved by changing grading or installing subsurface drain tubing to lower the water table. Often wet soils are due to excess irrigation. Avoid this by irrigating thoroughly and as infrequently as possible. Avoid nightly watering particularly in fall or early spring when moss growth is vigorous.

Thin turf due to injury is a common cause of moss encroachment. Unirrigated lawns turn brown and thin out during summer. When fall rains come, these lawns may not recover fast enough to compete with moss. Lawns injured by chinch bugs in summer are often slow to recover in fall and are subject to moss encroachment. Severe dethatching in fall may also predispose the lawn to moss because turf is thin when fall rains come. Proper culture which encourages healthy dense turf during the moss season will reduce moss encroachment in most situations.

Mechanical Control

Moss can be physically removed by dethatching in early spring. Optimum timing is mid-March through April when moss is still healthy and vigorous. With a flail type dethatcher (available at rental agencies) as much as 75% of the moss can be removed physically. Dethatching should be followed by nitrogen fertilization to stimulate turf growth and increase density. Where moss is severe, chemical sprays applied after the dethatching operation will enhance control further.

Chemical Control

Many chemical materials are effective for killing moss in lawns. Most commercially available formulations contain metals such as iron (Fe), copper (Cu), or zinc (Zn) as the active ingredient. Cryptocidal soaps are also available. All of these materials can kill moss but some are more effective than others.

Cu and Zn are good moss killers on roofs and walks and will not stain structures. Unfortunately Cu and Zn compounds act slowly as moss killers and in lawns may injure desirable turf grasses. Iron compounds are highly effective moss killers in turf. Moss kill is rapid and Fe also stimulates a "green-up" of turf. Complete fertilizers with iron often give good moss kill and stimulate grass growth which improves turf appearance.Iron stains concrete and many other surfaces, so it must be applied carefully. Salts and chelated iron products applied as liquids are generally effective on moss at 0.5 - 1.0 lb. Fe/1000 sq. ft. Dry formulations or fertilizer plus iron products are generally effective at rates of 0.8 - 1.5 lb. Fe/1000 sq. ft. The key to effective control with iron compounds is thorough coverage of moss foliage. Liquid materials and dusty fertilizer plus iron products are very effective in providing thorough coverage and control of moss.

Cryptocidal soaps are relatively new chemicals for moss control. Soaps act as contact killers and tend to bleach out the moss to a whitish-yellow color. This is in contrast to the dark brown color of moss treated with iron. Soaps are safe on sidewalks and other structures. Typical application

rates for cryptocidal soaps are 2.5 qts product/1000 sq. ft. Limited testing at OSU indicates these rates are quite effective.

In older literature, ammonium sulfate is often included as a moss control material. Extensive tests at OSU indicate it has little impact on moss but does stimulate turf growth which often masks the appearance of moss. < § >
