

# Lichens on Woody Shrubs and Trees

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**L**ichens are often blamed for the decline and death of numerous shrubs and trees in Alabama landscapes. That's not too surprising because these unusual plantlike organisms are commonly seen on the exposed limbs and trunks of declining or dead shrubs and trees, especially azaleas, dogwoods, and pecans.

Actually, lichens rarely have anything to do with poor top growth or death of shrubs and trees. Instead their appearance is often related to damage from environmental stress or poor management. Exposed limbs on damaged plants simply give lichens access to the sun they need for growth with little competition.

## Life History

These often inconspicuous, hardy, and adaptive plants are composed of a fungus and a

green or blue-green alga. This union or symbiosis produces a long-lived organism that does not look like either the fungal or algal partners. Both partners contribute to the growth of the lichen. The alga uses photosynthesis, like other plants, to produce food while the fungus supplies water and essential minerals and produces a structure that protects the alga from extreme environmental conditions. Together they thrive in some of the harshest environments on earth where few other plants and neither partner alone can survive.

Lichens colonize a wide range of exposed surfaces of limbs, stumps, fence posts, soil, rocks, and other living and nonliving objects. Lichens are firmly attached to these hard surfaces. They are most numerous on

limbs and trunks of large mature trees and shrubs in full sun, particularly those plants with badly thinned canopies. Most lichens will not thrive on heavily shaded twigs and branches of healthy woody plants. Few lichens are found in areas with high levels of ozone, sulfur dioxide, acid rain, and other common air pollutants; consequently, lichens are a good indicator of air quality.

Three types of lichens have been described: (1) crustose forms, which are flattened against the limb (Figure 1); (2) foliose forms, which produce leaflike folds above the limb (Figure 2); and (3) fruticose lichens, which produce highly branched structures with hair or fingerlike projections (Figure 3). Most lichens seen on trees and shrubs are gray-green; however, the color of other species varies



**Figure 1.** Crustose lichens on tree trunk.



**Figure 2.** Foliose lichens on branches of azalea.



**Figure 3.** Fruticose lichens on tree trunk.

from yellow and orange to dark brown. When wet, most lichens are firm, but some black or brown forms are gelatinous.

Reproduction of most lichens occurs when small pieces break off or the entire thallus (body) fragments. Lichen fragments are spread by wind, splashing water, and other means to suitable substrates. The fungal partner of many lichens produces spores. A lichen may appear if a spore of the fungal component germinates near compatible algae. Some spores "capture" algal cells as they are ejected from the fungal fruiting body.

### Damage

Lichens, generally, are not considered plant pathogens. Only a few cases of parasitic activity by lichens have been reported. The fungal partner of one lichen was suspected of killing twigs and small branches of elm by infecting the cork cambium, which is found just below the bark. This suspected pathogenic activity was never proven.

Lichenized forms (*Strigula* spp.) of the green alga *Cephaleuros* are plant pathogens. *Strigula* is the causal agent of algal leaf spot of camellia, southern magnolia, and other shrubs

and trees in the Deep South. Although southern magnolia and camellia are most common hosts, this disease has also been reported on honeysuckle, live oak, mahonia, maple, privet, sumac, sweet gum, and wax myrtle. On leaves of southern magnolia, the lichen *Strigula* appears as numerous small grey-white crusty spots. Spotting of the leaves may be unsightly, but this disease is not a threat to tree health.

Lichens can cause other plant problems. Foliose and fruticose lichens on leaves may shade foliage, but shading may slow as the host plant grows. A thick covering of lichens on a twig or branch may interfere with gas exchange of host tissues, causing their further decline or death.

### Control

Good plant vigor is the best defense against lichens. Heavy infestations of lichens are most common on shrubs and trees in declining or poor health. Following recommended establishment, watering, and fertility practices will promote the development of a thick leaf canopy, which will inhibit lichen growth on twigs and limbs. Better growing conditions and soil fertility may stimulate new plant growth

and ultimately suppress the lichens. Light pruning of affected limbs will remove some lichens and stimulate new shoot growth which may help shade out the remaining lichens. Trees and shrubs in extremely poor condition often will not respond to better care and should be replaced. Refer to Extension Circular ANR-258, "Pruning Ornamental Plants"; Extension Circular ANR-388, "Liming And Fertilizing Ornamental Plants"; and Extension Circular ANR-410, "Establishing Woody Ornamentals" for additional information on pruning, planting, and maintaining shrubs and trees.

Presently, no pesticides are registered for the control of lichens commonly found on the twigs and branches of shrubs and trees. Kocide 2000 (1 level tablespoon per gallon) and Kocide DF (1/2 level tablespoon per gallon), applied at the rate of 0.75 pound of product per 100 gallons of spray volume, will control the lichen (algal) leaf spot caused by *Strigula* spp. on southern magnolia. To control this disease, Kocide 2000 should be applied every 7 to 14 days, starting with the unfurling of the new leaves. Sprays should be continued until the leaves mature.



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Use chemicals **only** according to the directions on the label. Follow all directions, precautions, and restrictions that are listed. Do not use chemicals on plants that are not listed on the label.

The pesticide rates in this publication are recommended **only** if they are registered with the Environmental Protection Agency or the Alabama Department of Agriculture and Industries. If a registration is changed or cancelled, the rate listed here is no longer recommended. Before you apply any pesticide, check with your county Extension agent for the latest information.

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