The Plant Doctor's LANDSCAPE TIPS

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PLANT OEDEMA

INTRODUCTION:

Oedema, also spelled edema, is a term used in both human medicine and plant science to describe "swelling." In the plant world, oedema is known as a "physiological disorder" of plants. This disorder is related to excess water uptake accompanied by less transpiration.

DIAGNOSIS AND SYMPTOMS:

Oedema initially appears like a water-soaked blister but later develops into corky callus tissue. Initial macro symptoms of oedema may appear as discolored or deformed foliage. Sometimes the entire leaf may turn chlorotic (yellow). In other situations, spots may develop (Photo 1). In other situations, and almost always, corky areas develop on the leaves or stems. These corky areas are actually callus tissue resulting from damaged, bursting cells. These corky areas usually occur on the underside of leaves and/or along leaf veins but may also occur on the upper leaf surfaces (Photos 2 & 3). In severe cases, defoliation may occur. Both herbaceous and woody plants may be affected.

CAUSES OF OEDEMA:

Oedema usually occurs when water uptake by the roots exceeds transpiration rates by the leaves. Often, the damage occurs when abundant or excess water is available under low light conditions. In other words, the stomata (air breathing holes in the leaf surface) may remain closed during low light or cloudy conditions, stimulating a water pressure buildup in the plants tissues, particularly the mesophyll tissues. This excess pressure stimulates cell bursting, resulting in the typical oedema symptoms.

Oedema may be mistaken for a variety of diseases and insect problems. Because oedema often occurs on the undersides of leaves, it may be mistaken for rust (fungal) diseases. Unlike many diseases on plants, oedema is not infectious or contagious. Oedema is not fatal nor is it very harmful to plants. The disorder may decrease the aesthetic appearance of plants and may look unsightly.

MANAGEMENT OF OEDEMA:

Because oedema occurs when moisture levels are high, whether it is high soil moisture or high humidity, decreasing the irrigation during low light conditions may preclude or minimize oedema symptoms. Watering early in the morning is less conducive for oedema than watering later in the day. If possible, increase light and/or air movement to stimulate transpiration from the foliage. Oedema is generally more common in greenhouse and nursery environments than in landscapes. On many nursery and landscape plants, oedema is rarely serious. Plants will recover with new growth over time, for example, the following spring for landscape plants.

For more information, please feel free to email me at robertsd@msu.edu or contact a professional plant health care provider. The author, MSU or MGIA do not endorse any particular products. If using pesticides, be sure to read and follow label directions.

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Photo 1: The spots on these euonymus plants in a Michigan landscape were caused by the physiological disorder, Oedema, not a disease agent or insect. Oedema occurred after several days of cloudy weather and abundant rain, almost eight inches in some areas, stimulated by the aftermath of Hurricane Ike. Severe defoliation occurred on many of the plants. All plants will recover just fine.

Photo 2: A close-up of the undersides of the spotted leaves from Photo 1 shows the numerous tiny water blisters and callus tissue caused by oedema on these euonymus plants.

Photo 3: Typical corky oedema symptoms of on Ivy Geranium.

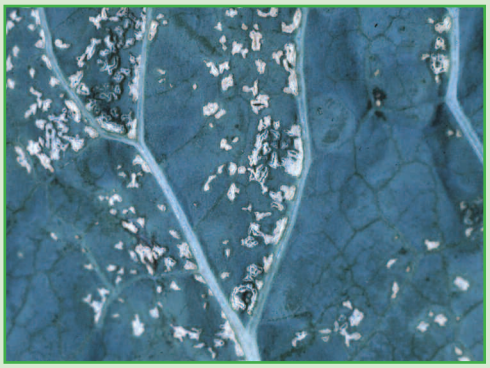

Photo 4: Another close-up showing the corky oedema symptoms, in this case, on the underside of the foliage.