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Michigan State University Extension Service

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How To Recognize And Control Oedema In Ornamental Plants

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WINTER GROWING CONDITIONS in homes and greenhouses, especially in Michigan, are apt to be cool with moist soil and low light levels. This situation can lead to a water imbalance in many plants, causing a physiological disorder called **oedema**. Certain plants such as ivy geranium (*Pelargonium peltatum*) can have oedema year-round, but it is an increasing problem for the energy-conscious greenhouse operator and homeowner.

Oedema can also occur on the leaves of vegetables, fruit trees and other ornamentals when soil moisture and relative humidity are high and air temperature and light conditions are low.

Symptoms

Symptoms are as varied as the plant species they affect. In general, tiny water-soaked blisters or bumps (Fig. 1) first appear on the lower leaves. The plant tissue surrounding the bumps or blisters may turn red or purple as in Balfour aralia (*Aralia Balfouriana*) or black as in periwinkle (*Vinca minor*). The water soaking may be followed by the formation of tan colored, corky scar tissue as found in ivy geranium (*Pelargonium peltatum*)

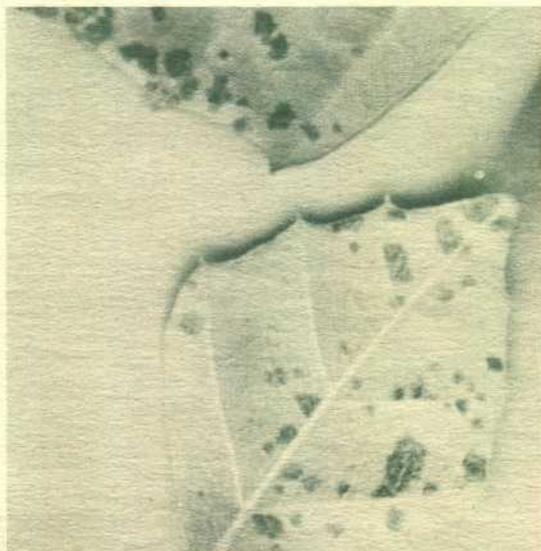


Fig. 1—Leaves of grape ivy showing the initial symptoms of oedema. The water soaked spots will later become rust colored.

(Fig. 2.) Leaves severely affected by oedema turn yellow and fall off. For all the variation in symptoms, oedema initially has a water-soaked appearance and develops on oldest leaves first.

Cause

Oedema is a non parasitic condition induced when soil moisture is high, and the air surrounding the leaves is cool and/or very humid. The roots absorb soil moisture faster than it can be lost through transpiration from the leaves. Water begins to accumulate in the leaf cells, causing them to swell (the water-soaked appearance) and then burst, forming crater-like patterns or ridges of scar tissue as the plant closes the wound created by the ruptured cells. Low nutritional levels can also increase the susceptibility of plants to oedema.

Other environmental factors such as light intensity and mineral concentration in the plant may influence oedema under particular circumstances, but the plant-water relationship has been found to be the main factor causing oedema.



Fig.2—Ivy geranium leaf showing characteristic oedema symptoms. The corky tissue develops as a wound-closing mechanism.

Control recommendations for the greenhouse

Use well-drained potting media, and keep glass or plastic clean for maximum light transmission. Keep oedema sensitive plants on the "dry side" during periods of cloudy, cool weather. Regulate ventilation to lower the moisture content of the air and avoid dense spacing of oedema sensitive plants to prevent high humidity situations.

Control recommendations for the homeowner

Water less frequently in winter. Increase the amount of light the plant is receiving. Move oedema sensitive plants to a warmer area.

The following plants are known to be oedema sensitive:

<u>Scientific name</u>	<u>Common name</u>
<i>Acer</i> spp	Maple
<i>Anthurium ohydreanum</i>	Anthurium
<i>Aralia Balfouriana</i>	Balfour aralia
<i>Brassica actinophylla</i>	Schefflera
<i>Brassica oleracea</i>	Cabbage
<i>Cissuo ohombifolia</i>	Grape ivy
<i>Clivia miniata</i>	Clivia
<i>Crassula argentea</i>	Jade
<i>Euonymus</i> spp.	Euonymus
<i>Fatsia japonica</i>	Fatsia
<i>Ficus elastica 'decora'</i>	Rubber plant
<i>Ficus lyrata</i>	Fiddle leaf fig
<i>Hedera helix</i>	English ivy
<i>Hibiscus rosasinensis</i>	Hibiscus
<i>Pelargonium peltatum</i>	Ivy geranium
<i>Peperomia obtusifolia</i>	Peperomia
<i>Vinca minor</i>	Periwinkle
<i>Yucca</i> spp	Yucca

Several species in the Cactaceae family are also sensitive.

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