

A3287

Plant disorder: Oedema

M. F. HEIMANN and G. L. WOLF

Oedema (edema) is a common problem that affects many greenhouse crops and house plants; occasionally it also occurs outside. Geranium, particularly ivy geranium and certain cultivars such as 'Irene,' are the most susceptible. Jade, palm, cactus, fern, ivy, pepperomia, and tomato are among other groups susceptible to oedema.

Oedema can be a problem for professional and amateur growers.

Symptoms and effects

Symptoms appear primarily on foliage. Oedemic leaves have blister-like, water-soaked swellings or bumps primarily on the undersurface. In advanced stages the swellings often develop a corky texture and become light brown or tan. Individual swellings can be the size of a speck or large enough to be seen easily. They become a concern when large numbers develop and the foliage begins to collapse.

While symptoms are most common on leaves, you can also find them on petioles and stems. Severely affected leaves of less succulent species such as geranium, may become cup-shaped. The entire leaf may turn yellow and die.

Cause

Oedema results when water congests in plant cells, apparently because of a disruption of the plant's water balance. Cells in the leaf enlarge and plug leaf pores and stomatal openings through which plants release water. The enlarged cells push against the leaf surface to form blistered areas. When blisters burst and rupture the leaf surface they cause dead corky tissue.



The blister-like swellings on the underside of this geranium leaf are indicative of oedema.



Close-up of oedema lesions on Christmas cactus.

Conditions that predispose plants to oedema are a combination of a warm, moist soil with a cool, humid atmosphere and/or a sharp temperature drop, for example at twilight. Low light intensity, poor air circulation and close spacing are also associated with oedema on many species.

Control

Changes in cultural practices or environment reduce problems with oedema. In the greenhouse, adequate plant spacing, increased air circulation and ventilation all help reduce the problem. Pay close attention to watering. Use a soil that drains well such as peat-vermiculite mix with a minimum amount of mineral soil. Remove saucers under baskets and do not water susceptible plants heavily on cloudy days. Water early enough in the day so that crops dry off before twilight. However, once plants are badly affected do not let them suffer from drought.

Rather than watering on a pre-determined schedule, water only when soil is dry. Some plants need water more often than others and some soils dry out faster than others. Do not treat them all the same. Many plants cease to develop oedema when you move them to a spot where they receive more light. But other plants, such as ivy geranium, do better in a shady spot with good air circulation.

The Oglivee Floral Company, a commercial producer, suggests these tips for controlling oedema on greenhouse geranium:

- Maintain a pH of 5.0–5.5.
- Use a light, well-drained, peat-lite medium with no more than 20 percent mineral soil.
- Maintain high nitrogen and iron levels.
- For ivy geraniums, grow in lower light intensity than zonal geraniums (about 3500 foot candles).
- Do not use saucers on hanging baskets.
- Maintain a cooler temperature (75°–80°F), provide good ventilation and keep hanging baskets away from glass.
- Water in the morning, and water only when needed.

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