UNIVERSITY OF ILLINOIS EXTENSION
College of Agricultural, Consumer and Environmental Sciences

report on
PLANT
DISEASE

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DEPARTMENT OF CROP SCIENCES
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OEDEMA OR CORKY SCAB

Oedema (or edema or dropsy) is a common non-infectious condition or physiological disorder mainly of herbaceous plants grown indoors, but sometimes of those grown outdoors. It is a problem found both in commercial and noncommercial operations. Oedema usually occurs when soil moisture is excessive and the normal loss of water from the leaves through transpiration is retarded by cool temperatures, high humidity, and low light. The disorder is often mistaken for a pathogenic or insect gall problem.

Figure 1. Oedema on lower leaf surface of geranium. The blisters/warts are watersoaked first; later develop into brown corky spots.

Some plants quite susceptible to oedema are begonia, cabbage, cacti, eranthemum, ferns, geranium, jade, palms, pansies, peperomia, schefflera, violet, and tomato. The ivy and Irene cultivars of geranium are more susceptible than other types.

Oedema is most likely to occur when the soil is warm and moist and the night air is cool and very humid. These conditions favor rapid water absorption by the roots and slow water release from the foliage. Poor air circulation and crowding are also associated with oedema on many plants. While oedema rarely kills a plant, it often reduces its aesthetic value.

SYMPTOMS

The succulent leaves of susceptible plants develop minute, watersoaked "blisters," "warts," or galls, especially on their undersurfaces (Figures 1 and 2) and occasionally on the larger veins and petioles. The blisters also occur on flower stalks and succulent stems. Single, pimplelike blisters are usually about 1/16 of an inch in diameter (Figures 2 and 3), but frequently merge to form larger areas. Following rupture of the blisters, the exposed surface becomes rust-colored, brown, or tan, and has a corky texture (Figure 1). When severely affected, the leaves of certain plants, such as geraniums, may become cup-shaped or turn yellow and drop early. On cacti, pale yellowish green spots form on the shoots. These spots often turn into irregular corky or rusty areas that may later become sunken. Other spots may remain smooth and greenish white.

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CAUSE

Oedema is simply the result of a plant absorbing water at a rate faster than it loses it by transpiration and other normal activities. As a result, the epidermal cells and those lining the stomatal cavities of the leaves, petioles, flower stalks, and stems become congested with water. The overly turgid cells expand and fill the substomatal cavities, plugging the stomatal openings through which water vapor normally is released. The masses of enlarged cells rupture and form the characteristic blistered areas. The rupture is followed by drying and dying of the epidermis, and finally by the formation of corky scabs or warty tissue.

Figure 2. Oedema on lower surface of schefflera leaf.

CONTROL

Changes in the cultural care of growing plants will usually check oedema. To check oedema, you should:

1. Use a well-drained soil mix containing a minimum of mineral soil for potted plants.

2. Avoid overwatering, especially during cool, overcast humid weather. Water only when the soil surface is dry. Remove saucers under pots, or discard any water that remains in the saucer 30 minutes after watering.

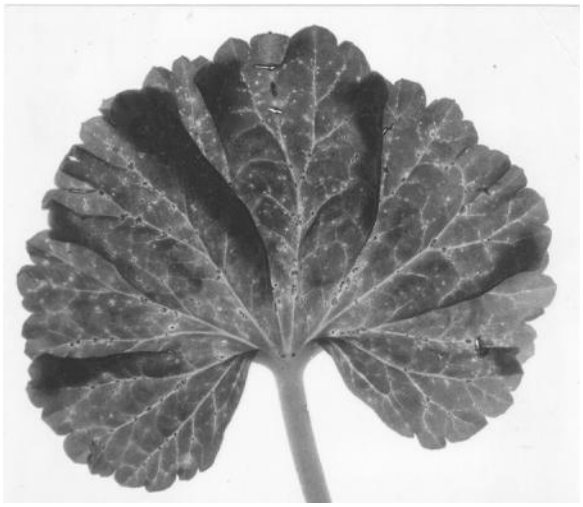

Figure 3. Upper surface of geranium leaf affected with oedema. (Herbarium, Cornell Univ.)

3. When possible, water only in the morning, when the temperature usually is rising. Keep water off the foliage.

4. Reduce the humidity of the air by increasing heat, improving air circulation, and providing sufficient light for good plant growth.

5. Space the plants farther apart. Adequate spacing will help improve air circulation and ventilation.

6. Avoid overfertilizing, especially when the plants are growing slowly, such as during the winter months. Keep the fertility balanced based on a soil test. Avoid low levels of potassium and calcium.

7. Many plants respond favorably when they are moved to an area that receives additional light. In some species, however, very high light levels may make plants more susceptible. Ivy geraniums, which are very susceptible to oedema, should not receive more than 2,000 foot candles of light. Bright sunlight is about 12,000 to 14,000 foot candles.

8. Geranium cultivars differ in their reaction to oedema. The following table gives the reaction of a number of popular cultivars to oedema.

Certain Geranium Cultivars Rated in
Decreasing Order of Resistance to Oedema

Most resistant	*Madeline crozy	Balcon Imperial
Double Lilac White	*Pascal	King of Balcon
Sugar Baby	*Riggi	Balcon Princess
Galilee	*Spain	Yale
Sybil Holmes	*Roulette	A 7 Y
Salon Queen	Beauty E. Berlin	Amethyst
*Cornell	Balcon	Royal

*These cultivars react about the same to oedema. (Data from Oglevee Associates Inc, Connellsville, PA 15425)