College of Agriculture, Food and Environment
Cooperative Extension Service

Plant Pathology Fact Sheet **PPFS-GEN-18**

Edema

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Importance

Edema (or oedema) is a nonparasitic disorder that, under the right environmental conditions, can affect a wide variety of herbaceous plants. This problem is most frequently observed in greenhouses on ornamentals and vegetable transplants, but it may also occur on potted plants in homes and offices. Crops in fields and gardens, such as cabbage, may also be affected.

Cause & Symptoms

Edema occurs when plant roots absorb water from the soil more rapidly than is lost from the leaves through transpiration.

It is likely to develop when the soil is moist and warm and the air is moist and cool. These conditions are likely to exist in homes and greenhouses during periods of prolonged cool, cloudy weather in winter and early spring. A drop in air temperature after several warm, muggy days provides ideal conditions for edema to develop outdoors in field plantings.

Under these conditions, water pressure builds up in the leaf cells, causing them to swell and to protrude as small bumps on the lower leaf surface. The cells eventually burst, giving a watersoaked appearance to the swollen areas. These swellings later become tan or brown and corky (Figures 1A, 2). If injury continues, leaves will turn yellow, droop and fall from plants (Figure 1B). Edema may occur randomly over the leaf surface or be concentrated along leaf veins (Figure 3) . In some cases edema may also form on petioles and stems (Figure 4).

Figure 1. Shown here on geranium, (**A**) edema results in the formation of corky areas on leaf undersides. (**B**) When severely affected, leaves can turn yellow and die.

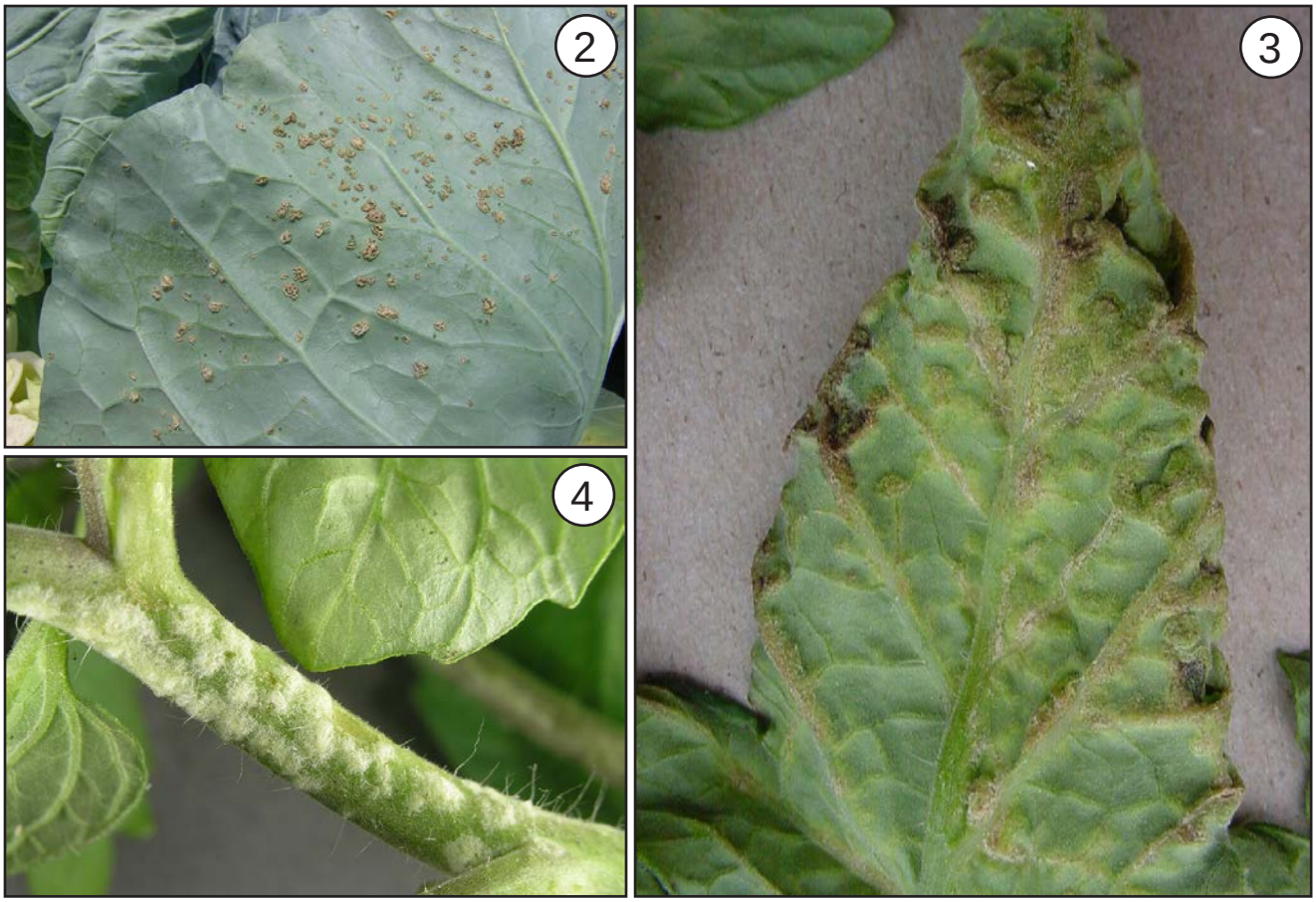

Figure 2. While more common on greenhouse crops and potted plants indoors, edema may also develop on crops in the field, such as cabbage. **Figure 3.** Edema developed along the veins on this tomato leaf. **Figure 4.** In severe cases, edema may also develop on stems and petioles.

Management

Edema can be controlled in homes and greenhouses by following proper cultural practices. Overwatering, high humidity, and low light intensities promote the development of edema. Mildly affected plants usually recover under favorable growing conditions.

- Avoid overwatering plants, especially during periods of cloudy weather.
- Improve the airflow around plants by providing adequate spacing and by regulating ventilation to help reduce humidity.
- Increase the plant's exposure to light.

Additional Resources

- UK Plant Pathology Extension Publications
https://plantpathology.ca.uky.edu/extension/publications
- UK Horticulture Publications
https://www.uky.edu/Ag/Horticulture/

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