

Illustrated Definitions of Plant Problems

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Figure 1A. These are healthy pumpkin plants; the white veins are normal.

Figure 1B. Pumpkins showing the disease powdery mildew.

Since a plant can't tell us how it's feeling, plant specialists must work with growers and gardeners to look for clues to a plant's health by studying its appearance.

The differences in appearance between a healthy plant and a diseased or stressed plant of the same type are the symptoms of the plant problem. It's important to make a comparison, because appearance alone can vary quite a bit depending on the plant itself, not just its health. For example,

the pumpkin plants in Figure 1A are normal even though their veins are white; they are completely healthy. Compare that to the plants in Figure 1B, which have a white coloration caused by the disease powdery mildew. These plants should not be white and are not healthy.

After analyzing a plant's appearance, it helps to use a common vocabulary to describe and discuss plant problems. This publication illustrates and defines

some basic terms used by plant specialists to describe symptoms. These are also the terms you'll likely find in written descriptions of plant diseases. If everyone is familiar with the terms, it will be easier to match what you see in the greenhouse to what you read and hear.

Chlorosis – yellowing of normally green plant tissue because of a decreased amount of chlorophyll (Figures 2-4), often the result of disease, herbicide injury, or nutrient deficiency. We can describe chlorosis as marginal (Figure 3) if it occurs at the edge of the leaf or interveinal (Figure 4) if it occurs between the veins on the leaf, leaving the veins green. Chlorosis may be associated with lesions (Figure 12).



Figure 2. General chlorosis
 Figure 3. Marginal chlorosis
 Figure 4. Interveinal chlorosis

Necrosis – death of tissue through injury or disease, especially in a localized area. Such an area is usually brown or black. Necrosis can occur on leaves (Figure 5), stems (Figure 6), or roots (Figure 7); it can be on the leaf margin (Figure 8) or interveinal (Figure 9) and may or may not occur with chlorosis (Figure 10).

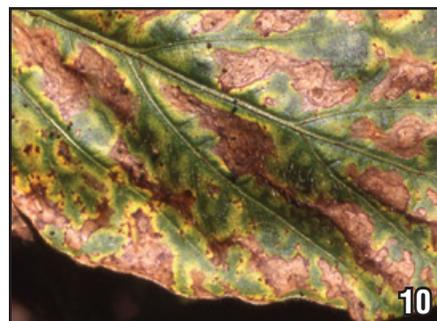


Figure 5. Leaf necrosis
 Figure 6. Stem necrosis
 Figure 7. Root necrosis
 Figure 8. Marginal necrosis
 Figure 9. Interveinal necrosis
 Figure 10. Interveinal necrosis with chlorosis

Lesion – a localized area of wounded or diseased tissue, often necrotic (Figure 11) and/or chlorotic (Figure 12).



Figure 11. Lesion without chlorosis
 Figure 12. Lesion with chlorosis

Water-Soaking – the dark green and wilted appearance of tissue, as though it had been steam-cooked. These areas can be localized on the plant cotyledon (Figure 13), leaf, or stem or may occur over the entire plant organ (Figure 14).



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Figure 13. Water-soaking caused by disease

Figure 14. Water-soaking caused by cold injury

Stunting – a slowing or lack of growth and development of a plant, often the first symptom that a plant has a problem (Figure 15).



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Figure 15. Stunting in the plant on the right, although both plants are the same age

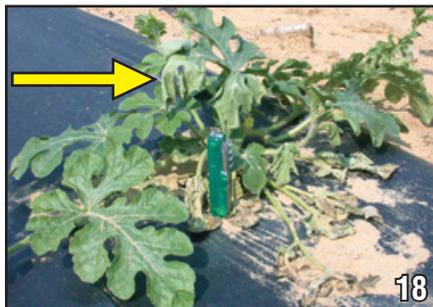
Wilting – drooping and loss of rigidity of plant parts caused by insufficient water uptake by the plant (Figure 16, 17, and 18).



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Figure 16. Wilting of mature plants due to dry soil

Figure 17. Wilting of a seedling due to disease

Figure 18. Partial plant wilting due to disease (note yellow arrow pointing to partially wilted leaf)

Mosaic – a variegated or patchy pattern of shades of green and yellow in normally green leaves (Figure 19).



Figure 19. Mosaic pattern on a leaf due to virus disease

Epinasty – downward curvature of a leaf, leaf part, or stem (Figure 20). Upward curvature is called *hyponasty* (Figure 21).



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Figure 20. Epinasty in a plant leaf, a symptom common in some types of herbicide injury (note the more parallel orientation of veins)

Figure 21. Hyponasty and whitening in a plant leaf

All photographs provided by Dr. Chris Gunter and Dr. Dan Egel
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Vascular Discoloration – change in color of the water-transport tissues of the plant caused by infection in those plant tissues. This often appears as brownish streaks within the stem (Figures 22 and 23). Healthy stem tissue should not appear streaked (Figure 24, yellow arrow).

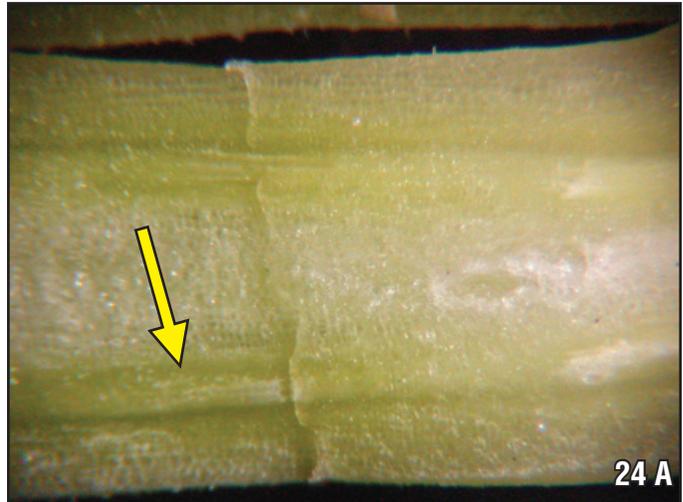
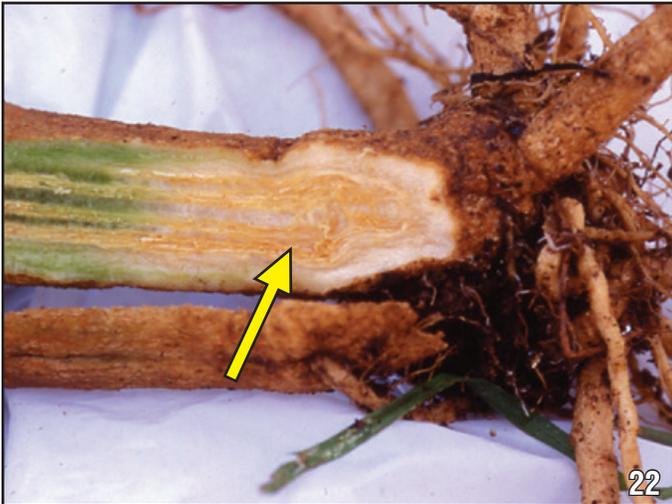


Figure 22. Stem tissue with vascular browning (note yellow arrow pointing to vascular tissue)
 Figure 23. Cross-section of stem with vascular browning, yellow arrow pointing to vascular tissue
 Figure 24A, B. Healthy stem tissue (A), vascular browning (B) (note yellow arrow pointing to vascular tissue)

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