



## NECROTIC LEAF BLOTCH OF GOLDEN DELICIOUS APPLES

Necrotic leaf blotch (NLB) is a common but minor disease that appears to be restricted to the Golden Delicious cultivar of apples and its bud sports. The disease, apparently a physiological disorder, has been observed for about the past 20 years in most apple-growing areas of the Eastern and Midwestern United States.

Necrotic leaf blotch usually first appears in Illinois during July and is most severe during July and August. Mature leaves from the base to the center of upright, succulent, rapid-growing shoots are usually the only ones that show symptoms. Young, immature leaves on succulent shoots and mature or cluster leaves on fruiting wood are not affected.

The effect of the disease varies among individual Golden Delicious trees both from orchard to orchard and from tree to tree within the same orchard.

### SYMPTOMS

Irregular brown blotches, usually 0.5 to 1.5 centimeters in diameter, suddenly appear in the leaves (Figure 1). The blotches are usually restricted by the larger leaf veins. Most affected leaves immediately turn yellow and drop all at once a few days after the necrotic blotches first appear. The most conspicuous symptom of NLB is the large number of yellow leaves on the tree and later on the ground that suddenly appear during July and August (Figure 2).

Necrotic leaf blotch usually appears in two to four or more distinct waves during certain periods, scattered throughout the latter half of the growing season. Between these periods little or no additional disease develops. During the course of the season, 10 to 25 percent defoliation may occur on severely affected trees in Illinois. All sports of Golden Delicious on any rootstock appear to be equally susceptible.



Figure 1. Golden Delicious leaves affected with necrotic leaf blotch (Cornell University).



Figure 2. Yellow leaves appearing in late summer (Cornell University).

## **CAUSE**

The causal agent of necrotic leaf blotch is unknown. The disease commonly appears during hot, hazy weather following a humid, rainy period. Other environmental factors or an air pollutant may be involved. The levels of ozone or sulfur dioxide in the air and foliar nutrients in the leaves have little or no effect on disease development. No fungal, bacterial, or other type of pathogen has been consistently isolated or associated with NLB.

## **CONTROL**

1. Golden Delicious trees sprayed during the cover period with fungicides containing maneb (Manzate D, Dithane M-22), mancozeb (Manzate 200, Dithane M-45), zineb (Dithane Z-78, Zineb), metiram (Polyram), or Dikar have less NLB than unsprayed trees or trees sprayed with other fungicides.
2. Trees that have an annual moderate crop of fruit have less NLB than trees that have a biennial bearing habit or a light fruit crop.
3. Golden Delicious trees pruned to a central leader commonly have less NLB than trees pruned to an open center.

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