



## Recognizing Drought injury on Plants

### Overview

- Drought stress occurs when plant roots are not absorbing enough water for their needs. There are many causes for drought stress. The obvious one is insufficient moisture. There may be just enough present for the plant to maintain itself, but no extra available for growth. In some cases, plants that are over-watered suffer drought stress symptoms. Over-watering drives oxygen out of the soil, which is needed by plant roots for proper functioning. If there is insufficient oxygen, roots die, just as they do when there is insufficient water.
- Symptoms are the plant's reaction to stress and provide clues during diagnosis. Following are some common symptoms of drought stress.

#### Symptoms found on entire plant:

- The pattern of plant damage or death occurs from the top of the plant down and from the outside of the plant inward.
- Plants wilt. One of the first symptoms of drought-stressed plants is the loss of turgidity. Plants or plant parts become limp and droopy.
- Plants or sections of them, appear chlorotic (yellow or yellow-green)
- Tree canopy may be thin. (Can also be due to insect, disease.)
- Plants may leaf out, then die later in the growing season, a result of depleted food reserves. This may occur during or even a few years after, a drought event.
- "Winter-kill" may occur. A reduction in hardiness develops as the result of decreased food production, movement and storage that occurs during a drought.
- Gummy exudates appear on twigs, branches and trunks.
- Suckers develop on branches and trunk.
- Stems and twigs die, with the outermost and upper ones dying first.

#### Symptoms found on leaves:

- Leaves are smaller than normal.
- Deciduous leaves turn brown from the outside edges inward and in between the veins ("scorch"). This symptom occurs because these areas naturally have the least amount of moisture in the leaf
- Evergreen needles brown from the tip downward.
- Evergreen needles turn yellow, red or red-purple.
- Leaves roll up and/or are misshapen.
- Leaves remain attached to tree, even though brown.
- Leaves are dull in appearance rather than shiny.