

# Understanding Drought Damage

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This past summer's drought caused extensive damage to many landscape trees and shrubs and a lot of this damage is yet to be seen.

During the growing season water is constantly moving into and out of a plant. The water moves out from the foliage as water vapor is replaced with water from the soil. Water moves into the roots and up into the plant through the vascular system. During a warm summer day a slight water deficit exists within the plant as more water moves out than in. During the night the deficit is corrected and a water balance restored. During periods of drought, there is insufficient water in the soil and a prolonged water deficit occurs.

Since a plant cannot add more water to the soil, it tries to restore the water balance by reducing water loss. Initially the foliage wilts and the leaf stomates, the opening through which water vapor is lost, close. This reduces water loss but at the expense of photosynthesis. Plants rely on photosynthesis not only to make enough food to sustain themselves each day, but also to create a reserve food supply that is used to create the buds that will persist through the winter and begin growth the following spring. Any prolonged drought will reduce the amount of food produced and stored by photosynthesis. Reduced food storage threatens the plant's ability to grow normally the following spring.

## Severe Droughts

If the drought is severe plant tissues fail. This manifests itself in foliage drop and small twig and branch die back. However, the real damage occurs beneath the ground. First there is a rapid loss of root hairs. These roots are rather ephemeral and are constantly being lost and regrown. As the drought continues the fibrous roots system begins to fail. These roots are very important because they are the roots that are necessary to produce the new root hairs. If a substantial number of fibrous roots die, the plant will have difficulty resuming normal growth the following year.

## Rapid Spring Failure

As the weather warms in the spring, plants break dormancy and begin to grow. Buds open and new stem tissue grows and produces new leaves. If the weather is average and there is sufficient soil moisture and there is a sufficient stored food reserve, the plant will grow and develop normally. If however, any of the above factors are not favorable, the plant will be in trouble. Some plants may exhibit less growth than normal, or they may lose some of their existing growth. Sometimes the plant may put out a good spring flush of growth and then collapse and die. It simply depleted all available energy, a sad result of the past year's drought.

## **Prevention is the Only Cure**

Drought damage can't be fixed but it can be prevented. Urge your clients to review their landscapes and select those plants they consider priority plants. When the next summer drought occurs urge them to initiate an irrigation program for those priority plants. In ground irrigation systems are best, but in a pinch a few hundred feet of hose can spell the difference between healthy growing plants the following spring and a lot of chain saw maintenance.