

Texas Fall Color

Texas is not nationally known for its beautiful fall color; however we are fortunate to have plants that change into signature autumn colors. During summer, the leaves of trees are factories producing sugar from carbon dioxide and water by the action of light on chlorophyll. Chlorophyll causes the leaves to appear green. Plants use sunlight to turn water and carbon dioxide into glucose. Glucose is a kind of sugar. Plants use glucose as food for energy and as a building block for growing. The way plants turn water and carbon dioxide into sugar is called photosynthesis. That means "putting together with light." Chlorophyll helps make photosynthesis happen. Chlorophyll is what gives plants their green color.

Every autumn, diminishing daylight hours and falling temperatures induce trees to prepare for winter. In these preparations, they shed billions of tons of leaves. In certain regions, the shedding of leaves is preceded by a spectacular color show. Formerly green leaves turn to brilliant shades of yellow, orange, and red. These color changes are the result of transformations in leaf pigments. Many native trees, shrubs, and perennials take on the autumn hue beginning in October for Texas. A few examples include: Sumac, crape myrtle, Texas smoke tree, maples, birches, and Texas pistache.

During winter, there is not enough light or water for photosynthesis. The trees will rest, and live off the food they stored during the summer. They begin to shut down their food-making factories. The green chlorophyll disappears from the leaves. As the bright green fades away, we begin to see yellow and orange colors. Small amounts of these colors have been in the leaves all along. We just can't see them in the summer, because they are covered up by the green chlorophyll.

In some trees, like maples, glucose is trapped in the leaves after photosynthesis stops. Sunlight and the cool nights of autumn turn this glucose into a red color. The brown color of oak trees is made from wastes left in the leaves. The range and intensity of autumn colors is greatly influenced by the weather. Low temperatures destroy chlorophyll, and if they stay above freezing, this promotes the formation of anthocyanins. Anthocyanins are naturally occurring compounds that impart color to fruit, vegetables, and plants. Derived from two Greek words meaning *plant* and *blue*, anthocyanins are also largely responsible purple-red colors of autumn leaves. Bright sunshine also destroys chlorophyll and enhances anthocyanin production. Dry weather, by increasing sugar concentration in sap, also increases the amount of anthocyanin. So the brightest autumn colors are produced when dry, sunny days are followed by cool, dry nights. A great place to see autumn color is in Lost Maples State Park near Vanderpool, Texas, where there are bigtooth maples. It is the combination of all these things that make the beautiful colors we enjoy in the fall.

