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Ab cission: The reason leaves fall

Why do leaves fall off plants and how does it happen? First, all plants shed their leaves. The most obvious are the so-called deciduous trees like pecans, sycamores, cypress, tulip and elm, all of which shed their leaves at once in the late fall. Others, such as magnolia, live oak and wax myrtle, are non-deciduous and shed their leaves as each leaf reaches old age, though many oaks have two times during the year when they drop a lot of leaves during a short period of time.

To explain why leaves fall, imagine a hackberry during summer. Each leaf has a complete connection with the circulatory system of the tree and there is a free exchange of water and nutrients. At the base of the leaf, near the stem, there is an area known as the abscission zone. To the casual observer, the abscission zone does not appear different from adjacent portions of the leaf, but microscopic examination reveals fiberless cells that are smaller than those of neighboring areas.

With decreasing day length in autumn, a number of chemical changes occur within the abscission zone and two distinct layers of cells form. The first, the separation layer, is characterized by short cells with thin walls. These characteristics render the separation layer weak and the weight of the leaf, often helged by a breeze or rain, causes it to fall from the stem.

The second is the protective layer which is formed by the deposition of fatty material within and between the cells on the stem side of the separation layer. This is the so-called leaf scar, which is obvious on stems of deciduous plants during the winter months. If one looks closely one may see tiny dots that represent bundle scars, the ends of veins, which previously carried nutrients to the living leaf. Sometimes these bundle scars appear to form animal faces within the leaf scar.

Late this autumn, on a crisp morning when there is a nice new leaf fall, reflect on the physiological phenomena precipitating the shower of leaves.

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