Guttation in Plants, Problem or Solution?

by Lyn Chimera

Have you ever noticed plants with droplets along the edges or tips of leaves? This can occur in houseplants or outside plants. It is a natural occurrence called guttation.

Guttation is the method by which some vascular plants such as grasses (or fungi) get rid of excess water during the night. When the soil is saturated, and the plant has absorbed as much water as it can hold, the excess water has to go somewhere.

During the day this is solved through transpiration. Transpiration occurs when plants absorb water from the soil and release excess water vapor into the air from their leaves. This happens in the stomata which are microscopic doughnut-like holes in the leaves. These same holes take in carbon dioxide and release oxygen. During the day they control the amount of water in a plant. Too much water and they release the excess through water vapor, too little water and the stomata close to allow the plant to retain moisture.

Stomata are closed at night. That's where guttation comes in. Guttation happens under the same circumstances when the plant has absorbed more water than it can hold but at night when the stomata are closed. Tiny, specialized cells called hydathodes, release the excess water as droplets.
Gardener alert: Guttation in plants can only be harmful if you are over-fertilizing. Minerals from the fertilizer can build up over time and cause white residue on leaf tips. This can cause burning of the leaf and is a sign to slow down on fertilization.

There are basic differences between transpiration and guttation besides one happening during the day and the other at night. Water drops from guttation are rich in minerals while transpired water is pure and in the form of vapor rather than drops. Honestly, the complex ways plants survive and grow is a continual amazement.

To learn more about guttation drops, honeybee water sources, and insecticides used in agriculture see https://link.springer.com/article/10.1007/s13592-018-0591-1 .

An interesting note in the paper's conclusion - "A recent field study found honeybee colonies in better condition in agricultural landscapes (dominated by corn fields) as compared to landscapes dominated by forest (Sponsler and Johnson 2015)".

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Master Gardener
Cornell Cooperative Extension

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