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Stomatal conductance in plant leaves

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Abstract: The stomata formed by the differentiation of the epidermis cells are one of the most important parts of the plant leaves and they regulate the gas exchange on the leaves. Through stomatal openings, the carbon dioxide (CO_2) required for photosynthesis enters the intercellular space from the air, and the water taken up by the roots from the soil is evaporated into the atmosphere. While the stoma makes up only 1% of the leaf area, they account for 90% of the total transpiration. This way, not only mineral nutrients from the soil reach the leaves through xylem, but also the leaf temperature is controlled. Stomatal conductance is a measure of gas exchange and transpiration through the leaf stomata. The rate of the stomal conductance depends on the density, size and opening of the stomata. The size and density of the stomata vary according to the species of the plant and the growing conditions. Stomatal conductance varies both seasonally and diurnally. Drought stress is one of the main factors that trigger the opening and closing of stomata. Stomata close to reduce the rate of transpiration when atmospheric vapor pressure deficit and evaporative demand are high. Consequently, it is essential to understand plant-water relationships according to plant species and environmental conditions. In this study, stomatal conductance was discussed with examples from various plant species and environmental conditions.
Keywords: Plant, Stomata, Transpiration