# Tomatoes and Heat

Plants lack muscles or pumps to transport water and nutrients from the roots to the leaves. Nutrients are minerals that are naturally insoluble, but are converted into water-soluble compounds by the appropriate soil bacteria, making them available to the plants. (Industrial agriculture with lifeless soils mimics this through liquid fertilization). Therefore, if water does not rise within the plant, the upper parts will not receive any nutrients.

Water transport relies on the tensile strength of water. Oxygen-free water can maintain cohesion in capillaries up to 130 meters (427 ft.), which is the scientifically established maximum height for trees. The leaves possess structures known as “stomata,” through which they continuously evaporate water. This creates a suction effect (similar to a drinking straw), drawing new water along with fresh nutrients upward. In this manner, all cells in the green parts of the plant are supplied. Distribution occurs, for instance, through the leaf veins, which are familiar to everyone, or from cell to cell.

However, when conditions are dry and/or hot, the plant closes its stomata to prevent excessive water loss. Consequently, no nutrients reach the cells—regardless of how well the soil is fertilized: the plant's metabolism slows down, fruits ripen more slowly, or even develop metabolic disorders such as blossom end rot due to calcium deficiency. Only during brief periods early in the morning and between daytime heat and nighttime rest can the plant “refuel,” provided there is sufficient water at the roots.

Pseudo-care measures such as removing leaves are, of course, ineffective. This action reduces both the photosynthetic area and the number of stomata, further weakening the tomato plant.