

## Effects of Water Scarcity on Plants



- Water is the most precious resource needed by plants and animals on the earth to grow and survive. The human body contains about 70% of water. We cannot think of our survival without water.
- But when it comes to plants, the only source that prevents them from withering is water. Plants need water to extract nutrients from the soil to prepare their food. Seeds germinate with the help of water.
- If water is not present in an adequate amount, we can see that the plants have wilted or died after a certain time span.
- We can understand that if water scarcity continues to increase, it will eventually wipe out the green carpet on the earth, resulting in less rainfall and a reduced supply of oxygen gas.
- If plants die, animals also won't get food from green plants and thus, the entire ecological system will come to an end due to prolonged water scarcity.
- Due to continuous water scarcity, plants undergo genetic mutations and adaptations, and this leads to evolutionary changes to help the plant survive in a limited water supply, mostly in deserts.



### Impact of Water Scarcity on Plants

There are quite a number of negative effects that water stress has on plants. While some of the effects can be noticed instantaneously, like drying and wilting of leaves, others are noticed on prolonged water scarcity. Here are some of the main effects of water scarcity on plants that we know of:

**1. Wilting:** Due to water scarcity, the turgor pressure in the plant cells that keep them erect and inflated gets reduced, and thus the cells collapse. This leads to plant death.

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**2. Reduced Photosynthesis:** The process by which plants prepare their food with the help of water, carbon dioxide and sunlight is known as photosynthesis. In case of water deficiency, plants will slow down their entire food production mechanism due to adverse effects on the photosynthesis apparatus leading to stomatal closure. As a result, the reduced amount of chlorophyll negatively impacts the plant's life.

**3. Reduction in Protein Synthesis:** Due to water scarcity, plant proteins are also drastically reduced due to gene alteration. Also, water stress leads to membrane disturbances, hence affecting the lipids that are crucial for plant growth.

**4. Reduction in Respiration:** Plants need lots of water during photosynthesis, and due to reduced water supply, as it gets affected, respiration also slows down. This can shut the plant's growth and cause discolouration. We can notice the dropping of fruits and flowers early from a plant due to reduced respiration because it reduces the capacity of the plant to carry extra baggage.



**5. Reduction in Transpiration:** During water scarcity, roots absorb less water from the soil. This leads to the closing of the stomata and even wilting and thus, decreasing the transpiration rate. As water supplies nutrients to the plants, if less water supply occurs to the plants, it causes plants to die.

**6. Evolutionary Adaptation:** Mostly in deserts, where water scarcity always prevails, plants alter their genetic make-up to avoid droughts. Plants have a metabolism and tend to photosynthesize faster. Thus, to reduce it, plants adapt to close stomata at night, reduce evaporation, and prevent water stress. In other words, plants will undergo biochemical, physiological, anatomical, and morphological changes over time. In extreme and unavoidable cases, plants simply die.