

Difference Between Plants Grown in Light and Dark

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Key Difference - Plants Grown in Light vs Dark

Photosynthesis is a process that is initiated by plants containing chlorophyll. This process that takes place due to the presence of sunlight. Accordingly, plants are adapted to grow under different light intensities. **Plants that grow under high light intensities with a higher rate of photosynthesis are referred to as plants grown in light while plants that grow under low light intensities or dark conditions with a lower rate of photosynthesis are referred to as plants grown in the dark.** This is the **key difference** between plants grown in light and dark

What are Plants Grown in Light?

The main objective of green plants is photosynthesizing. They utilise sunlight and a special pigment molecule known as chlorophyll. The chlorophyll molecule will capture light that falls on the leaf surface. Different wavelengths of light will influence the rate of the photosynthesis. Therefore, sunlight is an important aspect. In the context of plants that grow under light conditions, the plant body is developed with adaptations to maximise the reception of sunlight. The plant's leaves are developed at angles to expose and capture to higher concentrations of light intensities.

The structure of the leaves of plants grown under light conditions possesses different adaptations to conserve the water levels and prevent excessive transpiration and evaporation. These adaptations are; smaller leaf size with a lesser surface area, thick leaves and cuticle and the presence of 2-3 cellular layers of palisade tissue layer. The plants grown under light conditions will contain leaves with a less surface area. This is to prevent the rate of transpiration and to preserve the water content in plants. Broader leaves with a larger surface area would be exposed to sunlight more, and eventually facilitate the transpiration and evaporation in higher quantities.



Figure 01: Plants Grown in Light

The thickness of the leaf also contributes to this aspect. Plants that grow in light have a thicker mesophyll layer with 2-3 palisade cellular layers. They possess a shorter internode. In the context of chloroplast arrangement, most of the chloroplasts are arranged within the palisade layer of the leaf. These plants do not wilt in short time periods.

What are Plants Grown in Dark?

Not all plants grow under light conditions. Some plants prefer less light intensities. Therefore, the structure and function of such plants differ from plants that grow under high light intensities. It is confirmed that light is an essential factor in the process of photosynthesis. Plants that grow under dark conditions might or might not initiate photosynthesis. They are adapted to perform photosynthesis under very low light intensities. Structural features of the plants (especially the leaves where photosynthesis takes place) are altered from a typical plant and is adapted to the environmental conditions that enable the plant growth.



Figure 02: Plants Grown in Dark

Plants grow under dark conditions possess a thinner cuticle. The thickness of the leaf is also less when compared with plants that grow under light conditions. This is mainly to facilitate the penetration of low levels of sunlight into the leaf. The chloroplasts of these plants are arranged evenly among two mesophyll layers; palisade and spongy. The palisade layer is one cell layer thick. The internodes of these plants are long, and the size of the leaves is relatively larger with a higher amount of surface area. This is to ensure that the leaf receives more sunlight under

low light intensities. The leaves of a plant that grows under dark conditions wilt rapidly.

What are the Similarities Between Plants Grown in Light and Dark?

- Both contain chloroplasts.
- Both can photosynthesise.

What is the Difference Between Plants Grown in Light and Dark?

Plants Grown in Light vs Plants Grown in Dark	
Plants that grow under high light intensities are known as plants grown in light.	Plants that grow under low light intensities or dark conditions are known as plants grown in the dark.
Leaves	
Plants grown in light are small and thick leaves.	Leaves are relatively larger in size and thin in plants grown in the dark.
Internodes	
Plants grown in light have short internodes.	Plants grown in light have longer internodes.
Compensation Point	
Plants grown in light have high compensation point.	Plants grown in the dark have low compensation point.
Location of Chloroplasts	
Most of the chloroplasts are found in the palisade layer of the leaf in plants grown in light.	Chloroplasts are distributed evenly among the two mesophyll layers; palisade and spongy in plants grown in the dark.
Cuticle	
Plants grown in light have thick cuticle to prevent excessive transpiration.	Plants grown in the dark have thin cuticle comparatively.
Palisade Layer	
Palisade layer contains 2-3 cellular layers in plants grown in light.	In plants grown in the dark have only one cellular layer in the palisade layer.
Wilting	
The wilting process is slow in plants grown in light.	Leaves will wilt rapidly in plants grown in the dark.
Support	
High Level Languages have more community support.	Low Level Languages do not have much community support.

Summary - Plants Grown in Light vs Dark

Plants photosynthesise, and their rate of photosynthesis mainly depends on the intensity of light. Plants that grow in high light and low light conditions show different adaptations to perform photosynthesis and their normal growth metabolism. The structure of the leaves of plants grown under light conditions possesses different adaptations to conserve the water levels and prevent excessive transpiration and evaporation. They have thicker leaves when compared with plants grown in the dark. This is to prevent the water loss by transpiration and to facilitate the penetration of light into the plants in plants grown in light and dark respectively. Both types contain chloroplast and chlorophyll for photosynthesis. This can be described as the difference between plants that grow in light and dark.

Reference:

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