PLANT PHYSIOLOGY: PHOTOSYNTHESIS CYCLE

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Abstract

Photosynthesis is a fundamental physiological process in plants through which light energy is converted into chemical energy, providing the primary source of organic nutrients for plants and supporting life on Earth. This process mainly occurs in the chloroplasts of plant cells and involves two major stages: the light-dependent reactions and the light-independent reactions, commonly known as the Calvin cycle. The light-dependent reactions capture solar energy and produce ATP and NADPH, while the Calvin cycle uses these energy-rich molecules to convert carbon dioxide into carbohydrates. This overview examines the major stages of photosynthesis, the role of chlorophyll, and the factors affecting the photosynthetic process, including light intensity, carbon dioxide concentration, temperature, and water availability. Understanding photosynthesis is essential for studying plant growth, productivity, energy flow, and the balance of atmospheric gases in ecosystems.

Keywords: Plant Physiology, Photosynthesis, Calvin Cycle, Light-Dependent Reactions, Chlorophyll, Chloroplasts, Carbon Dioxide, ATP, NADPH, Glucose, Light Energy, Plant Growth, Photosynthetic Process.