

Review

# Tendencies Affecting the Growth and Cultivation of Genus *Spirulina*: An Investigative Review on Current Trends

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**Abstract:** *Spirulina*, a kind of blue-green algae, is one of the Earth's oldest known forms of life. *Spirulina* grows best in very alkaline environments, although it may flourish across a wide variety of pH values. There are several techniques for growing *Spirulina* spp., ranging from open systems such as ponds and lakes, which are vulnerable to contamination by animals and extraterrestrial species, to closed systems such as photovoltaic reactors, which are not. Most contaminated toxins come from other toxic algae species that become mixed up during harvest, necessitating the study of spirulina production processes at home. Lighting, temperature, inoculation volume, stirring speed, dissolved particles, pH, water quality, and overall micronutrient richness are only a few of the environmental parameters influencing spirulina production. This review article covers the conditions required for spirulina cultivation, as well as a number of crucial factors that influence its growth and development while it is being grown. In addition, the article discusses harvesting processes, biomass measurement methods, the identification of dangerous algae, and the risk of contaminating algae as it grows on cultures. *Spirulina*'s rising prospects as food for human consumption are a direct outcome of its prospective health and therapeutic advantages.

**Keywords:** *Spirulina* spp.; cultivation; low-cost media; temperature; pH function; biomass; algae toxicity; microbial contamination



**Citation:** AlFadhly, N.K.Z.; Alhelfi, N.; Altemimi, A.B.; Verma, D.K.; Cacciola, F. Tendencies Affecting the Growth and Cultivation of Genus *Spirulina*: An Investigative Review on Current Trends. *Plants* **2022**, *11*, 3063. <https://doi.org/10.3390/plants11223063>

Academic Editors: Hwan Su Yoon and Piotr Dąbrowski

Received: 21 September 2022

Accepted: 9 November 2022

Published: 11 November 2022

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## 1. Introduction

Blue-green algae, also known as cyanobacteria, are considered to be one of the first known forms of life on Earth. Algae make up a broad and diversified group of actual nucleus creatures that are known as eukaryotic [1,2]. Its cytoskeleton is a primitive nucleus that has several properties in common with plant nuclei since it is capable of photosynthesis (phototrophic nutrition). The cellular forms of cyanobacteria have developed into a variety of forms, ranging from unicellular forms to multicellular forms. Cyanobacteria can be found in a wide variety of habitats, including aquatic, terrestrial, and marine systems, as well as more extreme or harsh ecosystems such as hot springs, desert soil, certain saline environments, and glaciers [3,4].

More than a thousand years of records show that people have consumed spirulina in the form of food. The blue-green algae spirulina has been a part of human diets for centuries and continues to be eaten in some communities [4]. It was first discovered in Lake Chad in 1940, ten thousand kilometers (km) from Lake Texcoco, another natural source of spirulina. The Kanembu tribe relies heavily on spirulina for protein. They harvest it from the Great Lake (Lake Texcoco) and bake it into a type of bread called "dihe"; spirulina was recognized as "a fantastic food source of the future" by the International Association