

## Editorial for the Third Issue of the Journal of Plant, Algae, and the Environment

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### Introduction

It is with great pride and a sense of profound responsibility that we announce a pivotal step in the evolution of the Journal of Plant, Algae, and Environment (Plant Algae Environ). Since its establishment in 2017 by Shahid Beheshti University, our journal has been committed to serving the scientific community by providing a dedicated platform for high-quality research in the critical fields of botany, phycology, and environmental sciences.

#### 1. Botany

Research on plant physiology, anatomy, taxonomy, genetics, and molecular biology, including studies on higher plants, bryophytes, and vascular plants. Recent trends emphasize plant adaptation to environmental stresses such as drought, salinity, and temperature extremes, and the use of genomics and molecular tools to enhance crop resilience (Zandalinas et al., 2021; Leisner et al., 2021).

#### 2. Phycology (Algal Research)

Studies on microalgae and macroalgae, including physiology, ecology, cultivation, and biotechnological applications. Modern research highlights algal responses to environmental stress, molecular mechanisms of stress tolerance, and the use of algae in

biofuel production, bioremediation, and high-value product development (Cheng et al., 2022; Jahan et al., 2024).

#### 3. Plant-Microbial Sciences

Interactions between plants and microorganisms, including symbioses, plant growth-promoting microbes, and the role of microbiomes in plant health and stress resilience. Current studies focus on microbiome engineering to improve agricultural sustainability (Trivedi et al., 2021).

#### 4. Interactions Between Plants, Other Organisms, and the Environment

Research on plant interactions with insects, pathogens, other plants, and abiotic environmental factors. Emphasis is placed on plant defense mechanisms, climate adaptation, and ecosystem-level impacts (Pastor et al., 2020).

#### 5. Plant and Algae-Related Research from Other Biological Disciplines

Biochemistry: Metabolic pathways, stress physiology, and secondary metabolites.

Biotechnology: Genetic engineering, synthetic biology, and CRISPR-based plant/algal improvements.

Phytotechnology: Application of plants and algae for remediation, bioenergy, and industrial purposes.

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Development of Techniques: New experimental, analytical, and cultivation methodologies.

Practical Applications: Use of plants and algae in agriculture, pharmaceuticals, nutrition, and environmental management.

By covering these areas, Plagen aims to provide an integrated platform that bridges fundamental research with applied science, contributing to environmental sustainability, agricultural innovation, and biotechnological advancements.

### Looking Forward

Plants and algae stand at the heart of life on Earth. They drive primary production, regulate ecosystems, and provide food, energy, and medicine for humankind. In an era of climate change and growing demand for sustainable resources, the role of plant and algal sciences has never been more urgent. By publishing cutting-edge studies, JPAE seeks to accelerate the exchange of knowledge, inspire innovation, and strengthen the infrastructure of scholarly publishing in Iran.

We warmly invite researchers, both national and international, to submit their best work and to join us in shaping the future of plant and algal research for the benefit of science, society, and the environment.

### References

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