

## Optimization of nitrogen and phosphorus in azolla growth as biofertilizer

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### Abstrak

Nitrogen is one of the most important minerals for living organisms. Azolla is known as a small water fern which can fix nitrogen through the symbiotic association with the blue green algae *Anabaena*. Experimental studies were carried out in the glass house, investigating the growth of Azolla using different levels of nitrogen and phosphorus in the media. The experiment used 12 treatments with 3 levels of nitrogen (0, 5, and 10 mg atom/L) and 4 levels of phosphorus (0, 10, 20, and 30 mg atom/l) in a factorial design with 3 replicates. The results show that the highest biomass for fresh weight (13.28 g), dry weight (1,126 g), and the fastest doubling time (7.71 days) were found in combination of 10 mg atom/L N and 30 mg atom/L P. Meanwhile, the highest protein content was found in combination of 5 mg atom/L N and 20 mg atom/L P. After the third day heterocyst cells in *Anabaena* could only be found in those two combinations, but the highest heterocyst cells was found in the lower N and P combination similar to the highest protein content. Further experiment is suggested to introduce Azolla as bio-fertilizer for acid water system, such as peat land water.