
Benefits of Incorporating *Azolla* in Rice Cultivation: Weed Control, Nitrogen supply and Yield Increase

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[Introduction]

Duckweed are flowering aquatic plants which float on or just beneath the surface of still or slow-moving bodies of fresh water and wetlands. *Azolla* is also a genus of small aquatic ferns that are native to Asia, Africa, and the Americas. *Azolla* is regarded as "Live Nitrogen Manufacturing Factory" because, it harbors nitrogen fixing Cyanobacteria. *Azolla* has potential significance as a nitrogen source in agriculture, especially in conjunction with rice (*Oryza sativa* L.) culture. In addition, azolla may suppress weeds or be considered as a weed depending on management; with proper management, little interference occurs between rice and *Azolla*. This review concentrates on its role in weed control and another benefits in rice culture.

[Materials and Methods]

The effects of *Azolla pinnata* on weed emergence were evaluated in terms of plot area coverage by an *Azolla. pinnata* mat, its biomass production and the amount of weed emergence in a rice paddy field experiment. The experiment was conducted following a randomized block design with three combinations of fertilizer and *A. pinnata* treatments (non-chemical fertilizer + *A. pinnata*/*Lemna minor* 500g/16m², fertilizer + *A. pinnata*/*L. minor* 500g/16m² inoculated 15 days after transplanting). The results revealed that after 40 days of inoculation. Soil samples of the experimental plots were taken in April and after harvest and analysed. The rice growth, yield and grain qualities also were measured.

[Results and Discussions]

Duckweed reduced weed growth 19~72%. Specially the thick *Azolla* mat in rice fields suppress weeds growth above 60%. *Azolla* make the N₂ fixation process very efficient. In contrast with chemical nitrogenous fertilizers, *Azolla* has various positive long-term effects, including the improvement of soil fertility by increasing total nitrogen, other nutrients and organic matter. The results showed a large variation in different duck weed species in their biomass multiplication response by phosphatic fertilizer application. However, the potassium fertilizer did not affect the duckweed biomass production.

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