



**Entrepreneurship Development Program
on
'Technologies Developed by ICAR-NRRI
to Strengthen Rice Production'**

21-26 December, 2020



Editors

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एक कदम स्वच्छता की ओर

Compendium
on
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to strengthen rice production’

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***Azolla* a potential nitrogen source for enhanced rice yield**

Upendra Kumar, Scientist, ICAR-NRRI, Cuttack

Application of urea in rice crop is slowly turning out to be toxic with environmental hazards. Moreover, frequent application of urea is increasing the input cost of agriculture. In this scenario, eco-friendly *Azolla* can be used as bio-fertilizer in rice crop to fix the atmospheric nitrogen in association with blue green algae. Utilisation of *Azolla* as a bio-fertilizer can be taken up as entrepreneurship opportunity.

Recommended dose

It is recommended that 10-15 tons-fresh weight of *Azolla* is required for one hectare of rice crop, which can supply around 20-40 kg N/ ha/ 20-75 days with increasing grain yield by 10-30%

Entrepreneurial opportunity

The total annual cost of production for 10 tons of *Azolla* (500 kg per harvest) grown in 500 square meter area (Rs. 2 lakhs) with an additional operational cost (Rs. 2 lakhs) is four lakhs. If it can be sold @ Rs. 50 per / kg, one can reap a benefit of Rs.5.0 lakhs/ year.

Economics of *Azolla*

Azolla has great biological N-fixing ability in rice due to its symbiotic association with cyanobacteria and can fixed around 30–100 kg N per hectare per crop.

Salient features

- *Azolla* is an aquatic fern found abundantly in lakes, water bodies and rice fields.
- Growth of *Azolla* reduces aquatic weeds in flooded rice fields.
- *Azolla* can be used as fodder for dairy cattle, pigs, chicken, ducks and fish.
- *Azolla* has symbiotic association with nitrogen fixing blue green algae.
- *Azolla* has great biological Nitrogen fixing ability (30–100 kg N per hectare per crop) and hence it has particular value for rice crops.
- *Azolla* used as biofertilizer substantially increases Nitrogen use efficiency due to enhanced Nitrogen uptake and reduced Nitrogen loss.
- *Azolla* can compensate the chemical fertilisr and pesticide usage in rice crop

