

The use of Azolla to increase N fertilizer use efficiency in lowland rice in Dano, Southwestern Burkina Faso

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Introduction

Nitrogen use efficiency by flooded rice is often low because of N loss from the soil through various chemical and biochemical processes. NH_3 volatilization is one of the major causes of low N fertilizer use efficiency. Important factors in NH_3 -volatilization are high NH_4^- -concentration of floodwater combined with high pH and high temperature.

Azolla has been found to reduce flood water pH and temperature and can therefore improve the efficiency of applied urea fertilizer in lowland rice.

Main Objective: To increase the yield of rice in Dano (Burkina Faso).

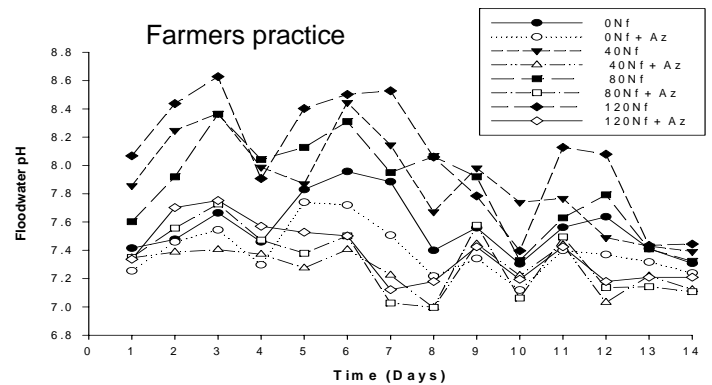
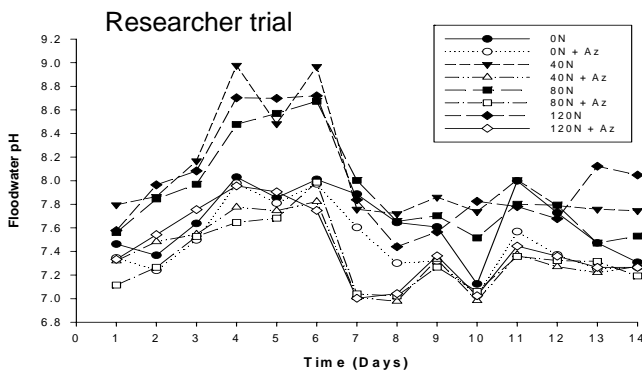
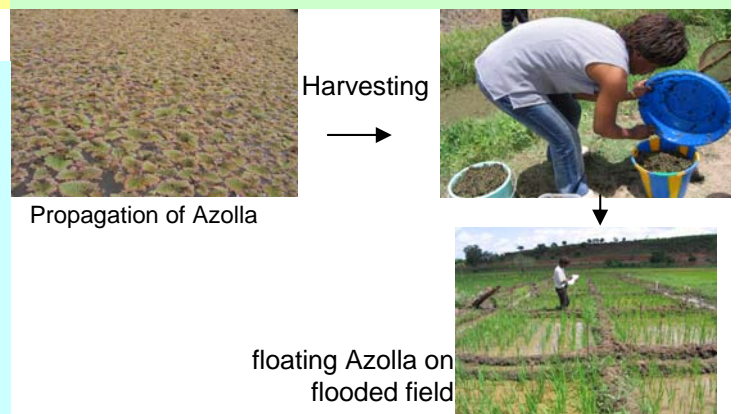
Sub-objectives:

1. Evaluate the effect of Azolla cover on the floodwater pH and temperature and their relation to NH_3 volatilization.
2. Assess the impact of Azolla on the yield of rice.
3. Evaluate the impact of Azolla on N uptake by rice in the Azolla / rice-based cropping systems.

Methodology

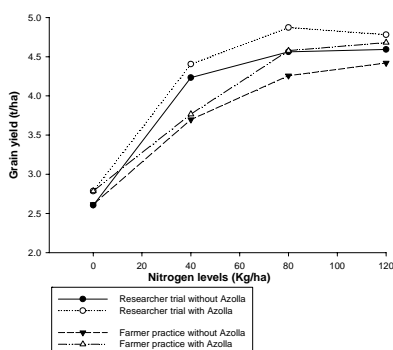
Sixteen treatment combinations consisting of four N levels applied alone or combined with *Azolla pinnata* were laid out in a Randomized Complete Block Design (RCBD) with four replicates (May – October, 2005)

Rice seeds of lowland cultivar, FKR 19 (120 day maturity) was nursed, transplanted and various treatments imposed.



Effect of Azolla on floodwater pH on researcher trial (28th June – 11th July 2005) and farmers practice (5th – 18th August 2005) after urea application.

Grain Yield



Conclusion

- ❖ Azolla cover reduced the sudden rise of floodwater pH after urea application, due to the prevention of algal growth on the floodwater surface.
- ❖ Increase in Grain Yield.
- ❖ This prospect is attractive in this part of the world where N fertilizers are scarce, expensive when available and there is need to improve grain yield to feed the increasing population

Effect of Azolla on Grain yield at harvest.

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