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| Title | Nitrogen Economy of Agri-Environmental Systems in Bangladesh | | |
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| Abstract |  |
| Bangladesh is currently self sufficient in rice, which accounts for approximately 80 % of the total cropped area, and 70 % of the cost of crop production. However, farmers are increasingly concerned about the perceived decline in productivity, expressed as the return on fertiliser inputs. In this study shows that low agronomic efficiency (5-19 kg grain kg-1 N) was caused by poor physiological efficiency (45-73 kg grain kg-1 N), rather than low supply of soil N or loss of fertiliser N. Thus, often the applications of large amounts of N fertiliser (39-175 kg N ha-1) by farmers to increase yields of Boro rice were not justified agronomically and ecologically. No one single factor could be identified to explain the low physiological efficiency. In addition to poor fertiliser response, N balance studies highlighted losses of mineral N (26-53 kg N ha-1) which accumulated prior to irrigation and also losses due to N removal (13-28 kg N ha-1) by weeds. In response to farmers concerns of the apparent decline in fertiliser response, PROSHIKA (an Non Governmental Organisation) recommend ecological farming in which no-till, mulches, compost and green manures were used to improve soil fertility, without the use of chemical fertilisers and/or pesticides. Beneficial impacts of ecological farming on N balances were observed due to the elimination of fertiliser N loss (30-133 kg N ha-1). Physical and chemical properties associated with soil fertility were generally enhanced in fields under ecological management with soils having a better granular structure and being more friable than soils under conventional management. Soil bulk densities were significantly (P<0.01) lower, except at Shibganj, and CEC, BSP and exchangeable Ca++ contents were significantly higher in ecological fields than in conventionally managed fields. No impact of ecological management on total soil organic matter content was found, however the differences measured in other soil properties such as CEC may infer changes in the quality rather than quantity of organic matter in soil. | |

**Please specify which Sustainable Development Goal (SDG) (s) falls under your research:**

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| Goal 1 | No Poverty | Goal 2 | Zero Hunger |
| Goal 3 | Good Health and Well-Being | Goal 4 | Quality Education |
| Goal 5 | Gender Equality | Goal 6 | Clean Water and Sanitation |
| Goal 7 | Affordable and Clean Energy | Goal 8 | Decent Work and Economic Growth |
| Goal 9 | Industry, Innovation and Infrastructure | Goal 10 | Reduced Inequalities |
| Goal 11 | Sustainable Cities and Communities | Goal 12 | Responsible Consumption and Production |
| Goal 13 | Climate Action | Goal 14 | Life below Water |
| **Goal 15** | **Life on Land** | Goal 16 | Peace, Justice and Strong Institutions |
| Goal 17 | Partnerships for the Goals |  |  |