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| Title | The efficiency of nitrogen fertiliser for rice in Bangladeshi farmers’ fields | | |
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| Abstract |  |
| Bangladesh is currently self-sufficient in rice (Oryza sativa L.), 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. Agronomic efficiency is a measure of the increase in grain yield achieved per unit of fertiliser input that can provide a way to quantify the observation of farmers. This study indicates that the yields achieved where only P and K fertiliser were applied ranged from 3–5 t ha−1, indicating good soil fertility, particular in terms of soil N supply (37–112 kg N ha−1). However, at recommended rates and at rates used by farmers, the yield response to application of fertiliser N was low. Data shows that grain yields were significantly correlated in both years (R2 = 0.77 and R2 = 0.67) with plant uptake in nitrogen. The internal nitrogen use efficiency seems to confirm that sink formation was limited by factors other than nitrogen. Low agronomic efficiency (5–19 kg grain kg−1 N) was caused by poor internal 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 high yielding variety Boro rice were not justified agronomically and ecologically. A rate of 39 kg N ha−1 is very low, hardly an environmental threat. No one single factor could be identified to explain the low internal efficiency. Therefore, it is concluded that the data presented tend to confirm the indication that yields are limited by a factor other than nitrogen, which could be crop establishment, plant density, water or pest management, micro-nutrients deficiency, poor seed and transplanted seedling quality, varieties and low radiation. | |

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

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| 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 |
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