

RESEARCH PAPER

Effect of twelve years integrated nutrient management practices on soil fertility and performance of upland rice in terraced land

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A long-term field experiment was started in 2001 on newly constructed bench terraces at the Department of Soil and Water Conservation in the experimental farm of School of Agricultural Science and Rural Development (SASRD), Nagaland University (NU), Medziphema, Nagaland to study the long term effects of various nutrients management practices on performance of upland rice and fertility of terraced land under rainfed condition. Twelve treatments involving N, P and K (NPK) fertilizers, farmyard manure (FYM), poultry litter, forest litter, *Azospirillum* and Zn either alone or in combinations were applied continuously for twelve years to evaluate the effect of integrated nutrient management practices on available N, P and K content and performance of upland rice in a terraced land. The available N and K content increased significantly in all the treatments whereas, available P content increased significantly in all the treatments except Forest litter burned+ ½ FYM over control. The highest accumulation of available N, P and K was found in NPK+ Poultry litter, NPK+ FYM and ½N+ PK+ ½N Forest litter treatments, respectively. The rate of build up of available N, P and K in different nutrient management practices varied from 3.57 to 22.5, 0.19 to 1.09 and 3.35 to 13.3 kg ha⁻¹ yr⁻¹, respectively. Maximum plant height was recorded in NPK+ FYM+ Zn treatment. The number of productive tillers per plant was also highest in NPK+ FYM+ Zn treatment. The highest straw yield was recorded in NPK+ FYM followed by NPK+ Poultry litter treatment. The highest grain yield was recorded in NPK+ FYM+ Zn followed by NPK+ Poultry litter treatment. Compared with NPK, grain yield in NPK+ FYM+ Zn, NPK+ Poultry litter and NPK+ FYM treatments increased significantly and were 38.1, 34.43 and 32.6 per cent higher, respectively. Among different nutrient management practices, NPK+ FYM+ Zn proved to be the best practices followed by NPK+ Poultry litter and can suitably be recommended for use not only to build up available N, P and K levels but also to produce higher grain yield in terraced land under upland rice cultivation.

Key words : Terraced land, Available NPK, Grain, Straw yield

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