



Phosphorus Enriched Organic Amendments can Increase Nitrogen Use Efficiency in Wheat

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ABSTRACT

Although nitrogen (N) has the highest requirement for plant growth, N use efficiency (NUE) seldom exceeds 40%. NUE may be improved by integrated application of fertilizer N and enriched organic amendments. The present experiment aimed to test the extent of increase in NUE by integrated application of fertilizer N farmyard manure (FYM) and rock phosphate enriched compost (RPEC). Mineralization kinetics and N release from FYM and RPEC were studied by an incubation experiment. Results revealed that maximum potentially mineralizable N as well as N release (283.9, 186.7 mg kg⁻¹ soil, respectively) were from RPEC + fertilizer N treated soils, followed by FYM + fertilizer N. Maximum yield, N uptake, and N recovery were obtained from RPEC + fertilizer N treated soils followed by FYM + fertilizer N. Soils treated with RPEC had shown significantly higher dehydrogenase activity than FYM treated soils. Thus, RPEC might increase yield as well as NUE over FYM. N uptake by plant at maximum tillering stage and flowering stage of wheat correlated positively ($R^2 > 0.85$) with the decay rate (k and kN_0) parameter of incubation experiment suggesting their relevance as indicators of plant available N.

ARTICLE HISTORY

Received 20 December 2018

Accepted 6 March 2019

KEYWORDS

Release kinetics; farmyard manure; rock phosphate enriched compost; nitrogen use efficiency