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African Journal of Agricultural Research Vol. 3 (9), pp. 633-639, September, 2008
 Available online at <http://www.academicjournals.org/AJAR>
 ISSN 1991-637X © 2008 Academic Journals

Full Length Research Paper

Effects of compost and green manure of pea and their combinations with chicken manure and rapeseed oil residue on soil fertility and nutrient uptake in wheat-rice cropping system

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Accepted 3 August, 2008

Abstract

Farmers use huge chemical fertilizers for cereal production, which causes health and environmental hazards. Adoption of legumes in cereal based cropping systems and improvement of organic fertilizers are needed to reduce chemical fertilizer use. Pot experiments were carried out with compost and green manure of pea plant residue with dried chicken manure and/or rapeseed oil residue to find out effects of compost and green manure on soil fertility and nutrient uptake by wheat and rice. Pea residue was mixed with chicken manure or rapeseed oil residue or half of chicken manure plus rapeseed residue or nothing was mixed for composting and green manuring for wheat. We also examined the residual effects of the fertilizers on rice. Composts of pea residue with chicken manure and chicken manure plus rapeseed residue enriched soil with N, P, K and other nutrients, and increased nutrient accumulation. Higher values were found for compost than for green manure but green manure with rapeseed residue also supplied higher residual

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nutrients and improved uptake and yield components. Rapeseed residue released nutrients slowly but chicken manure was efficient and stimulated the former when they were mixed. Pea compost with chicken manure or chicken manure plus rapeseed oil residue is recommended to improve soil fertility for wheat and rice.

Key words: Chicken manure, compost, green manure, rapeseed oil residue, soil fertility improvement.

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