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## Agricultural Residues Increase Rice Yield and Soil Fertility in Suburban Agriculture in Cuba

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### Abstract

Suburban agriculture plays a great role for alimentation of people in Cuba. However, often the yields are low due to the shortage of fertilisers. Usually urea is applied as a dosage of 70 kg ha<sup>-1</sup> N, whereas no P and K is given. Residues of crop and animal production can help to mitigate this problem. Rice husks are used in poultry production in Cuba to absorb the excrements (poultry rice-husk manure, PRH manure). This residue is commonly thrown away. The investigations were carried out under production conditions with the objective to evaluate the effect of the PRH manure alone and in combination with mineral N supply (urea). Rice (variety IACuba 30) was sown in an agricultural cooperative in a suburban area of the municipality of Santo Domingo, Villa Clara, in rainy season on a typical leached yellowish Ferralitic soil (Kandiustalf, after USA Soil Taxonomy), which is characterised by natural poverty in nutrients and organic matter. PRH manure was applied at dosages of 0, 10 and 20 t ha<sup>-1</sup> alone and combined with N, 70 kg ha<sup>-1</sup>. A randomised block design with four replications was used. The results demonstrated that with 20 t of PRH manure plus urea N the highest yield was obtained (5,15 t ha<sup>-1</sup>). However, the relatively high amount of N given in this treatment may result in high N losses. Yields of 3.85 t after urea and 3.83 t after 20 t PRK manure application implicated that the addition of 20 t ha<sup>-1</sup> of PRH manure can replace an urea application at a rate of 70 kg ha<sup>-1</sup> while providing organic matter and raising the P and K levels in soil at the same time. From the economic point of view the treatment with 20 t PRH manure was found to be the best. The results showed that the application of PRH manure can substantially increase rice yields and soil fertility.

**Keywords:** Manure, nitrogen, phosphorus, rice