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Nutrients from Organic Waste to Improve Soil Health and Enhance Food Security in Sri Lanka

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Abstract

Effective management of organic waste and wastewater is crucial for preventing environmental pollution and health degradation in Sri Lanka. Since externality costs of open dumping of organic waste and investment costs of sanitary landfilling are quite high, recovering nutrients from biodegradable waste can be an option to reduce the environmental externalities while providing marketable output – compost. Thus, compost from organic waste can also considerably substitute the imports and agricultural applications of chemical fertilisers. Considering these multiple benefits, an economic optimisation model is applied to assess the costs and potentials of compost production and distribution in Sri Lanka. Model was calibrated using data from multiple statistical reports from national and international development organisations. Three scenarios are tested and compared each other. The first scenario considers the situation no organic wast e is produced and distributed. The second scenario addresses the case where compost plants are implemented in urban area and produced compost is used in the province where it is produces. The last scenario takes into account possibility of the distribution of the produced compost. The results indicate that recycling organic waste into compost can considerably reduce fertiliser import costs (US$ 104–145 Million), sanitary landfilling costs (US$ 214–406 Million) and environmental pollution costs (US$ 127–142 Million). Inter-provincial distribution of the recovered nutrients from organic waste in Sri Lanka would considerably contribute to reducing the shortage of fertilisers in major farming areas in the country and further reduce the costs of importing chemical fertilisers. Compost quality certification and easiness of obtaining land use rights for establishing compost plants are also important for expansion of nutrients recovery from organic waste streams.

Keywords: Compost, environmental externality, fertiliser demand and trade, optimisation model, resources recovery and reuse (RRR)

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