**Resource use and management for agriculture, food and nutrition security by small holder farmers of the tropics: Impacts and feedbacks on ecosystem processes and microclimate**

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It is becoming increasingly imperative to Top of Form

promote sustainable and integrated management of natural resources (water, soil and waste) in addressing the needs to meet the rising demand for food, fiber, feed and fuel to cover the needs of a growing population. It is necessary to address environmental resource use challenges for agriculture, food and nutrition security by small holder farmers of the tropics in the arena of climate change, mainstream adaptation/ resilience into farming systems, and examine their impacts and feedbacks on ecosystem processes and microclimate. The sustainable use of resources and improvement in productivity and environmental performance of small holder farms can be achieved via application of science and technology. Therefore scientific (agroecological and technical) packages for solving the challenges of low productivity and environmental performance of small holder farms of the tropics should be developed and scaled up for adoption. Efforts should include the promotion of integrated farming practices approach (IFPA). Hence, the urgency to bridge the gap between farmers' yields and technical potential yields, via adoption of IFPA approach of enhanced use of inputs and adoption of productive agro-technologies, promotion of returns in terms of food security, nutrition and rural income gains and environmental performance of small holder farmers of the tropics. The coupling and feedback from environment resource use in landscapes with ecosystem processes (nutrient cycling, water use, evaporation, heat and heat islands, other biogeochemical cycles and microclimate is known. Improved information from tropics can serve as strategy for advancing adaptation and resilience to extreme weather shocks. The need for an integrated approach to sustainably manage and recycle urban and agricultural wastes including water and to promote environmental health cannot be over-emphasized. In order to key into global efforts to convert wastewaters from menace to a resource for agriculture and aquaculture, and the attainment of sustainable and healthy environment, the need for an integrated approach to sustainably manage and recycle urban and agricultural wastes including waters and to generate technologies for their safe use cannot be over-emphasized.

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