Biochar Urine Nutrient Cycling for Health (BUNCH): A feasibility study of organic nutrient cycling to enhance homestead food production for improved nutrition (Bangladesh)

Introduction

In Bangladesh, around 35% of children under five suffer from chronic undernutrition, partly because the Bengali diet is dominated by rice with few fruit and vegetables and thus lacking in important vitamins and minerals. Homestead gardening can provide an opportunity, especially for women, to produce fresh fruit and vegetables for the family. However, land for gardening is limited and often not very fertile. Commercial mineral fertilizers are not a suitable solution as they are difficult to dose and a substantial expense for poor farmers.

Urine is known to be an excellent and highly efficient fertilizer, but is underused because of the odour nuisance and associated socio-cultural barriers. Biochar is a light and porous material with highly adsorptive properties that can soak up urine and transform it into an odourless solid fertilizer that increases soil organic matter, biological activity and water-holding capacity. Biochar can be produced at village level from crop and wood waste in soil-pit kilns.

Study Objectives

We aim to explore the feasibility of recycling organic household nutrients to improve soil fertility and productivity using the novel urine-biochar technology, within the Homestead Food Production project “FAARM” in rural Bangladesh. In nine villages, BUNCH will install biochar production systems – including kilns and urine recovery – while training local NGO field workers and assessing technical and social obstacles to technology adoption. Farmers will set up field trials in their own gardens to compare crop yields between plots treated with the new urine-biochar fertilizer and usual practice.

If successful, the evidence generated will be used to advocate for the inclusion of this technology into agricultural projects throughout Bangladesh. First, we hope to scale up to the remaining villages in the FAARM project, and through the project’s links with BRAC University and the Bangladesh Agricultural Research Institute, eventually nationwide through both NGO and Governmental mechanisms.

Partners

University of Heidelberg (Lead), Ithaka Institute for Carbon Strategies, Switzerland, Helen Keller International and BRAC University in Bangladesh.