



Private Enterprise Development in Low-Income Countries

Training Microentrepreneurs in Green Production Methods: Supporting Growth and Responding to Climate Change

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This study examines the impact of training microentrepreneurs in green production methods on ecological outcomes and business practices. Results from the pilot suggest that the intervention led entrepreneurs to adopt more environmentally-friendly production practices and to significantly reduce their use of harming input materials.

Introduction

A growing concern about the millions of micro-enterprises that dominate the private sector in low-income countries (LICs) is that they pose a threat to the environment by using inefficient production technologies, harmful input materials and adopting unsustainable waste management practices¹. This challenge is particularly salient in Bangladesh, which counts 33 million micro-clients² and is affected by climate change.

However, there is evidence that micro-enterprises which use 'green' inputs for production (e.g. organic seeds, organic dyes, compost or green fertilizer) as well as environmentally responsible production techniques, such as controlled water usage, natural pesticide applications, micro drip irrigation systems or solar water pumps, not only produce lower greenhouse gas (GHG) emissions, but also have the potential to improve the efficiency, and thereby the profitability, of their production processes. This suggests there is scope to improve the environmental performance of SMEs by relaxing information constraints and providing skills training.

The goal of this project was to assess the impacts of a 'green microfinance' intervention – a bundle consisting of easier access to microcredit and training about environmentally-friendly business practices and technologies – for microenterprises in Bangladesh. The research measured the level of GHG emissions from micro-enterprises and recorded their ecological outcomes.

Methodology

The study was conducted in 45 villages of two climatically-affected districts of Bangladesh: Moulvibazar and Magura, and focused on agro-based microenterprises involved in five sectors: cropping, aquaculture, cattle rearing, cane and plants, and poultry farming. A sample of 210 agro-based microenterprises was selected for primary survey, 100 of which were randomly assigned to either the treatment or control group. A baseline survey about firms' business practices was administered to all firms in the sample before the intervention.



Fig. 1 - Microentrepreneur engaged in nursery raising and production of organic vegetables

¹ Hall et al., 2008

² MRA, 2013

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In partnership with the Centre for Natural Resources Studies (CNRS), a Bangladeshi NGO-microfinance institution, we offered an aid bundle to the treatment firms that included training on the environmental impact of their operations, skill development training on green and organic production, recycling and green technologies. Treatment firms were also offered better microcredit arrangements which involved longer grace period, a lower interest rate and a larger grant amount.

A year after the intervention, a follow-up survey was conducted in both the control and treatment groups to measure the firms' ecological footprints. The Cool Farm Tool software was used to measure GHG emissions from each individual farm³. The tool captured CO₂, CH₄, and N₂O emissions resulting from soil disturbance, fertilizer use, resident nitrogen, crop residue management, pesticide-use, livestock production and land-use change.



Fig. 2 - Production of plants materials (raw materials for making traditional bed mats)

Results

The results suggest that the training intervention led the treatment entrepreneurs to adopt more environmentally-friendly production methods, and that the effects were evident within one year of the intervention, across two crop cycles. As illustrated in Figure 3 below, treatment farmers tend to manage abandon or reduce the use of chemical fertilizers, use less energy, and reduce or manage waste more efficiently than control farmers. A higher proportion of treatment entrepreneurs also chose to use their microfinance loans towards entirely 'green' ventures relative to their control group counterparts. For example, the two enterprises depicted in Figure 1 and 2 used no chemical inputs; generated zero-wastes; used negligible amount of energy; and utilized their loan amounts to buy compost and labors.

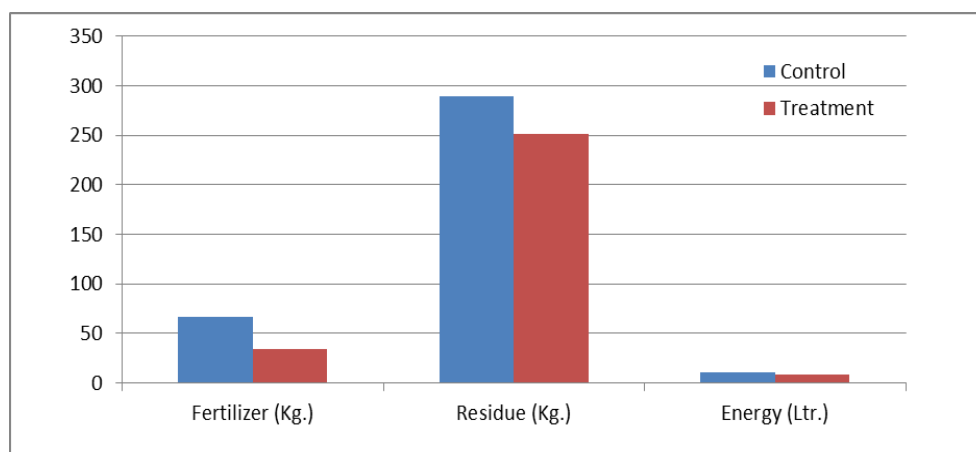


Fig. 3 - Comparative fertilizer and residue generation (in kg per acre) and energy use (in litre per acre) by control and treatment firms

Further, data collected using the Cool Farm Tool revealed that about 90% of the enterprises in the treatment group had lower net yearly GHG emissions than those in the control group about, as illustrated

³ Hillier et al, 2011



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in Figure 4. Around 40% of the treatment micro-enterprises even engaged in carbon sequestration (sequestration is the process of capture and long-term storage of CO₂, to ensure it does not get into the atmosphere) while only 12% of the control firms sequestered CO₂.

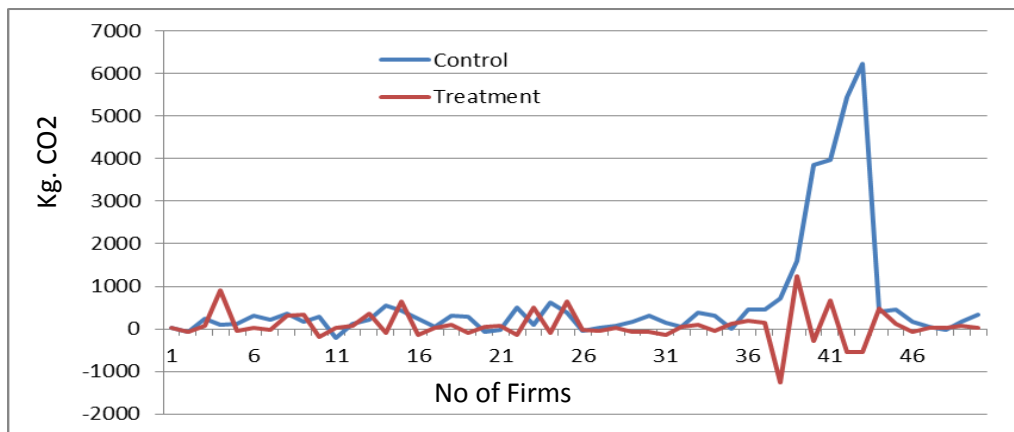


Fig. 4 - GHG emissions of treatment and control enterprises in kg. CO₂ equivalent

Policy Implications

The study's results will be directly useful to the Microcredit Regulatory Authority (MRA) and the Central Bank of Bangladesh, as both of these institutions are currently encouraging 'green business' practices to meet larger environmental sustainability targets. In addition, findings from this study set an example of what the 'ecological modernization of micro-enterprises' in LICs can achieve in terms of better environmental outcomes, and could inspire government institutions, rural development agencies, and MFIs concerned with both poverty reduction and environmental conservation to replicate this type of intervention. It is also worth noting that MFIs promoting green entrepreneurship can enter into global carbon trading market with the green and carbon sequestration contributions of its clients.

Moving Forward...

One important question that remains to be explored is that of the relationship between economic and ecological performance. Is it characterized by a trade-off, or could training in environmentally-friendly procedures be associated with a more efficient use of inputs and a corresponding rise in productivity?

Building on the encouraging results from this study, it would be worthwhile to carry out a further studies on the ecological modernization of micro-enterprises to test the robustness and external validity to these preliminary findings, as well as to uncover the precise mechanisms which underlie the results of this report and assess cost-effectiveness. Further interventions to make microenterprise more environmentally-friendly could include, for example, the use of renewable natural resources, non-chemical fertilization (mainly manure and compost) and adoption of clean technologies. In the long run, such studies could contribute to the elaboration of official 'green firm' guidelines for running environmentally sustainable micro-businesses, and even support the extension of environmental regulation on GHG emissions to micro-enterprises.