

Research on sustainable and accessible agricultural technologies for combatting poverty and hunger

Eradicating hunger will require hundreds of millions of rural people to graduate out of poverty. These people are characterized by very limited physical assets, cash and other resources: their main resource is labour and they depend mostly on agriculture, forestry or fisheries activities. They also traditionally have rights of access to land through their communities, even though these rights are often not officially recognized and increasingly threatened.

The options available to the rural poor for graduating out of poverty are basically two: improve their agricultural productivity or seek wage employment in other sectors. Let us concentrate here on the first of these two options.

To improve productivity, agricultural technologies available and promoted by governments and their partners, particularly in crop production, generally require the use of costly inputs (improved seeds, fertilizers, pesticides, etc.) and equipment which need to be purchased on the market and imply for the poor the need to have access to cash. A great number of rural poor are not aware of these technologies, have not been trained to use them. For example, in India a survey conducted in 2007 showed that less than 6 % of farmers got information on agricultural technologies from extension workers¹. The poor being short of cash, they also are unable to purchase these inputs unless they can have access to loans. A study conducted by the World Bank in 2012 showed that the poor were excluded from financial services: for example in some countries like Cambodia, the Central African Republic or Yemen, only 5% of adults had an account, while in Niger, 99% of the adults were found not have an account. This is no surprise as the poor rarely have sufficient cash to think of opening an account and as it is very difficult for the small number of poor who do have access to loans to pay back their debts. As they and their families suffer from chronic undernourishment, they understandably tend to consume most of the additional production that they get from using improved technologies rather than selling them for cash and for reimbursing their loans.

The adoption of the promoted input-intensive model has shown its limits in Asia where decades after the launching of the Green Revolution which brought a tremendous increase in agricultural production, hundreds of millions of people still live in poverty and hunger (150 million in China, 220 million in India, for example). In Africa, attempts to have Green Revolution technologies adopted by small farmers on a large scale have failed miserably despite huge efforts made by governments, aid agencies and NGOs.

It is high time to reflect on alternatives available and on how to promote them effectively. It would be too long here to make an inventory of all the low-input technologies that have already demonstrated their capacity to increase remarkably production and productivity without requiring cash and which make extensive use of what the poor have, labour, and what is primarily a public good, knowledge. Sustainable rice intensification (SRI) developed several decades ago in Madagascar and now promoted by Cornell University

¹ <http://www.hungerexplained.org/Hungerexplained/Exclusion.html>

and the World Bank has produced higher yields than input intensive technologies and has been adopted by a large number of farmers throughout the world for several crops². The Push-Pull technology³, developed by scientists at the International Centre of Insect Physiology and Ecology (ICIPE) for maize, is a knowledge-based technology for controlling pests, improving soil nutrients and producing a balanced feed for animals while contributing to increased yields of maize. There are many other low-input technologies available in ecological agriculture or agroforestry, and more could and should be developed if appropriate resources were allocated to research in location-specific solutions and their dissemination among farmers. The resources invested in this type of research and extension would have a tremendous economic and social profitability. But, as these technologies cannot be embedded in goods for sale, their development and promotion will never attract private investors or companies. They can only be funded by the public sector or private philanthropic foundations.

The development of this type of technologies represents the new frontier for agriculture. Besides being accessible (being low cost) to the poor and contributing to the improvement of their lives by generating more income and reducing hunger, they are environment-friendly, contribute to reducing Green House Gas emissions by increasing carbon storage in the soil, and are a source of preservation of biodiversity in agriculture.

Materne Maetz
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Read also: Development of research on a sustainable and accessible agricultural technology - http://www.hungerexplained.org/Hungerexplained/Fourth_principle.html

² SRI International Network and Resources Center <http://sri.ciifad.cornell.edu/>

³ Push-pull, A platform technology for improving livelihoods of resource poor farmers in sub-Saharan Africa <http://www.push-pull.net/>