



The Family Farm in a Globalizing World

The Role of Crop Science in Alleviating Poverty

Michael Lipton

Prologue

Family farms are operated units that derive most labor and enterprise from the farm family. They have proved resilient, even in the rich world, and small family farms dominate agriculture in East and South Asia and Sub-Saharan Africa. Yet these are areas of concentrated poverty; in 2004, they contained over 92 percent of the world's 1.1 billion "dollar-poor" (households consuming less than one U.S. dollar's worth of a world average consumption bundle, per person per day, at 1993 purchasing-power-parity values). Kick-starting the reduction of mass dollar poverty normally requires accelerated growth of staples output on family farms. Whether this is feasible and sufficient depends on national political and economic incentives and institutions to create and apply appropriate crop science, land and water access, and open markets in the context of appropriate state-led provision of public and merit goods. Many Asian and Latin American countries have gone a long way on this path, but they still have far to go. Much of Africa has hardly started. Progress is made possible by new science and by a crucial demographic shift—but is handicapped by rich-world policies towards agriculture, trade, and science.

The Argument

1. Family farms have advantages that enable them to dominate

Small farms have lower labor-related transaction costs and more family workers per hectare, each motivated to work and to find, screen, and supervise hired workers. Large farms have lower capital- and land-related transaction costs, allowing owners to more readily finance equipment, which they can use over many hectares. So small farms have advantages in early-developing countries, which have low capital per unskilled worker and scarce land per person, while large farms win out in developed countries, with more savings, capital, and (usually) good rural land per unit of unskilled rural labor.

Despite differing farm size and techniques, family management dominates farming at all levels of development. Consequently—unlike virtually any other major sector, even retailing—the economic advantages of family oversight prevail in farming across a wide range of development levels, typical farm sizes, capital/land/labor ratios, and types of product and ecology. Data strongly suggest that such farms retain competitive advantages despite market distortions, and despite some genuine and growing market handicaps as agricultural supply chains globalize and concentrate. The evolution of the family farm is thus linked to economic development.

Almost all family farms are now commercial, profit-seeking enterprises. The persistence and power of family farming not only chart a credible course for evolving farmers in Africa and Asia but also help explain the Northern farm protectionism that makes their lives so hard.

2. The Green Revolution provided a special type of growth in family farm productivity, partly by luck

A country normally needs to provide the poor with higher employment, higher unskilled wage-rates, and/or more command over low-cost food staples to initiate major cuts in mass dollar poverty. Productivity growth in small family farming alone usually has the potential to raise all three. Normally this later permits, and induces, further poverty reduction via cash-cropping, rural nonfarm work, and shifts to urban employment and income growth. But mass dollar poverty reduction almost always starts with large, widely shared increases in profitably produced farm output (especially food staples) and profitably sought and offered farm employment mainly on family farms. Especially as land gets scarcer, this requires a technology-based agricultural revolution. But even if that works, stringent conditions must be met for the main dollar-poverty groups—small farmers, rural laborers, and the urban poor—to benefit. There are virtually no examples of mass dollar poverty reduction since 1700 that did not start with sharp rises in employment and self-employment income due to higher productivity in small family farms.

However, while farm growth is *necessary* to initiate mass poverty reduction, it may not be *feasible* or *sufficient* to overcome binding land and water constraints. Feasibility depends on availability, quality, and distribution of farmland (and water); crop, land, and water science; and prospects for national and global trade and exchange, and their effects on farm sales and prices. Sufficiency depends on a corresponding rise in the poor's command over staple foods. Even large increases in staple food productivity would do little to cut mass dollar poverty if they were confined to large-scale farms, using tractors and combines but few workers, and selling at government-boosted prices that the underemployed and near-landless poor cannot afford.

The Green Revolution not only increased the supply of locally available staples but also the demand for farm labor, wage-rates, and thus the work-based income of the dollar-poor. The lesson for future crop science policy is clear: When choosing among research paths, a high employment share in extra science-induced farm income should normally be seen as a gain. For countries where the dollar-poor lose out if the demand for farm labor declines, aid-backed farm research should not support better combines, herbicides, mechanical transplanters—or varieties whose advantages depend on these—unless the results can be shown to be cost-effective ways to cut poverty.

3. Mass poverty can be slashed by farm-based progress given three predisposing, perhaps necessary, preconditions

Widescale pro-poor progress based on crop science for small family farms does not initially *need* good roads, credit, extension, and so on,

helpful though they are, but the following are almost always essential: (a) total factor productivity (TFP) growth on farms via locally profitable and (usually) employment-intensive technology; (b) land and water that are neither very unequally distributed nor unsustainably used; and (c) farm production patterns that are not too vulnerable to disabling of incentives by domestic or overseas policies that sharply erode or distort farm prices; by unshiftable initial conditions, such as imposed gross land inequality; or by inbuilt adverse trends, such as poor farmers or workers not just producing but being locked into commodities where science-induced progress leads to more-than-offsetting price erosion.

4. Formal science is increasingly needed to satisfy the technology precondition

With the population acceleration of 1730–2000 and the increasing scarcity of unfarmed, high-quality land, poverty reduction increasingly required TFP-increasing technical progress to be faster, more yield-enhancing, and employment-intensive. To achieve this, farm-based innovation remained necessary, complementing (but increasingly elbowed out by) formal, off-farm science.

5. Formal farm science needs radical reform to improve pro-poor results

The Green Revolution could not escape the law of diminishing returns. Despite success in parts of rainfed Asia and some of Africa, past evidence suggests severe limitations on conventional plant breeding, and research based on the Mendelian breakthrough has increasingly had to focus on maintaining yields rather than raising them. Radical scientific and institutional innovation is needed. Private companies need to see public-purpose research outcomes as made profitable, mainly by contracts to achieve specific outcomes to raise family-farm productivity or robustness in neglected areas and crops.

6. The land/water distribution necessary for family farming to cut mass dollar poverty is violated in southern and eastern Africa

Regions with mass poverty, such as southern and parts of eastern Africa, where family farming has been subverted (mostly by colonial land grab, but sometimes by inequality within traditional land systems or by the politicized economy of land redistribution) need to get their large, low-employment landholdings to shift towards not-too-unequal family farms, as consensually as is feasible.

7. Land/water sustainability is most threatened by crop expansion into marginal lands

Some aspects of intensification raise serious environmental concerns: loss of biodiversity, inappropriate or excessive pesticide use, water and plant nutrient depletion, salinity and waterlogging, and nitrate and nitrite buildup in drinking water imperfectly separated from excess nitrogen fertilization and ill-drained farm water. These environmental concerns, while not obviating the need for yield-increasing intensification through innovation in crop science, may narrow the acceptable means to that end.

8. Rich countries' farm support has increased, undermining incentives for developing-country agriculture

Most developing countries have greatly reduced the destruction of incentives to employment-intensive farming, but the baton has passed to the North, (a) through state subsidies and protection that stimulate Northern farmers to overproduce, thereby glutting world markets and reducing incentives to Southern farmers; and (b)

through the effect of such protection in inducing Northern farmers to pay for more national science, producing yet more output than would be commercial at free prices. This output compounds the effect of directly subsidy-induced overproduction in undermining farm incentives for the South. In addition, global science is diverted away from the farm goals of the poor towards demands inflated by Western farm support for labor-saving production. To some extent, the prospects of better crop science to help the rural poor in globalizing economies depend on agricultural trade and policy reform in OECD nations.

9. Small-scale family farmers in rich countries are a major effective pressure towards farm supports, which impede the absolute poor in poor countries

Political economy, not malice, is at work. Nevertheless, it is small and family farms in the North that perpetuate its farm support regimes and, in democracies, underpin rich farmers' lobbying for ever-greater farm support. The OECD and emerging-country family-farm lobbies will not respond to economic theory alone, however valid; but if the lobby is reasoned with and shown alternatives, victory is possible.

10. Remedies are urgent to take advantage of the population slowdown in developing countries, with its temporary but sharp effect in cutting the dependency ratio

Lower proportions of dependents create a window of opportunity for growth and poverty reduction. The process began with large declines in infant mortality rates during 1945–60. Though these initially raised dependency ratios, the "saved" infants grew to working age, fertility fell, and dependency ratios also began to fall, as in Africa and South Asia today. Thus offers a window to help the poor out of poverty. However, if extra farm employment prospects are not provided by crop science and appropriate policy, the extra workers will face downward pressures on employment and wage-rates. The opportunity will then be lost as, after 2030–50, aging populations pull the dependency ratio up again.

11. Can crop science for family farms help the poor to gain from globalization?

Given that most developing areas are labor-rich and capital-poor, most globalization should increase their specialization in high-employment farms and crops, which should make attacking mass poverty easier through extra employment, productivity, food output, and income growth from small family farms. Apart from growth effects, globalization should, within developing countries, make income distribution more pro-poor.

Concluding Thoughts

Mass poverty reduction initially depends on widespread growth of farm productivity and employment income, and hence on specific scientific progress, usable by small family farmers, mostly in so far recalcitrant areas. Such science needs to see **productive** employment creation in agriculture as a benefit, not a cost.

Michael Lipton (mlipton@onetel.com) is a research professor in the Poverty Research Unit at the University of Sussex.

This Policy Brief is based on 2020 Discussion Paper 40 of the same title.

"A 2020 Vision for Food, Agriculture, and the Environment" is an initiative of the International Food Policy Research Institute (IFPRI) to develop a shared vision and a consensus for action on how to meet future world food needs while reducing poverty and protecting the environment. Through the 2020 Vision Initiative, IFPRI is bringing together divergent schools of thought on these issues, generating research, and identifying recommendations. The 2020 Policy Briefs present information on various aspects of the issues.

Copyright © 2005 International Food Policy Research Institute. All rights reserved. Contact ifpri-copyright@cgiar.org for permission to reprint.

