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What is the Scope for Horticulture to Drive Smallholder Poverty Reduction in Africa?

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INTRODUCTION: Rising urban populations and per capita income growth in Sub-Saharan Africa (SSA) are creating major opportunities for local farmers by driving growth of 5%-6% per year in domestic and regional market demand for food – implying a doubling of demand in little more than 10 years. Fresh fruits and vegetables[1] stand to be an important winner in this growth, due to their high income elasticity of demand and multiple opportunities to add value.

The production and marketing of fresh produce could also make unique contributions to Feed the Future objectives of reducing malnutrition and poverty and promoting gender equity. Increased consumption of fresh produce can help reduce micronutrient nutrition, a major health problem in developing countries. Because of its labor intensity and high production values per unit land area, fresh produce may provide the greatest opportunity of any set of crops for land constrained smallholders to escape poverty through agricultural commercialization; land *per se* should be less constraining to commercial horticultural production than to the production of other crops. Some of the most land-constrained farmers are women, especially among urban and peri-urban areas producers of green leafy vegetables.

Yet in trying to exploit these opportunities, farmers confront a series of constraints related to high cash production costs, knowledge intensity, perishability, and often extreme price variability. Frequently, these constraints are most intractable for the most land-constrained farmers, who tend to have less education, less access to credit, and fewer productive assets than less land-constrained farmers. Combined, these constraints make horticultural production at commercial scale difficult to achieve and risky.

This policy synthesis first sets the context in which these challenges will play out by summarizing best available evidence on the current size and future growth prospects of export compared to domestic/regional horticultural systems, and of the *modern* sector compared to the *traditional* sector. It then uses household survey data [2] to summarize information on the types of smallholder farmers that have been able to take advantage of the opportunities presented by fresh produce in Zambia, Mozambique, and Kenya, before closing with key programmatic conclusions.

KEEPING THINGS IN PERSPECTIVE: EXPORTS COMPARED TO DOMESTIC MARKETS, AND MODERN COMPARED TO TRADITIONAL MARKETING SYSTEMS: For many years, *horticulture* in the minds of African policy makers and western donors was synonymous with horticultural exports to developed countries (Tschirley et al. 2004). Yet even in Kenya, Africa's outstanding success in export horticulture, the domestic

[1] We use the terms horticulture, fresh fruits and vegetables, fresh produce, and FFV interchangeably. We do not include Irish potatoes in this definition.

[2] Financial support for collecting the various data sets was provided by USAID and by the Bill and Melinda Gates Foundation.

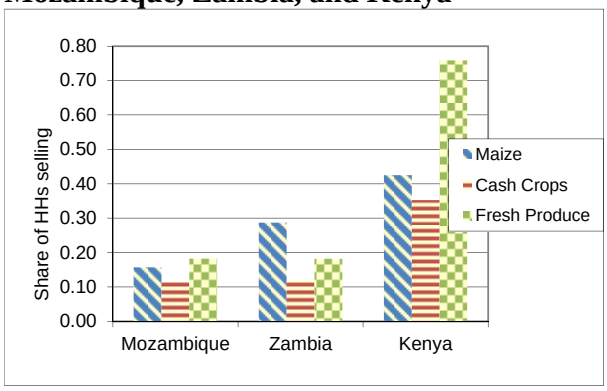
horticultural system, rooted within a regional system linked by trade, is four to five times larger by value than the export sector. In most other countries of Africa, the domestic/regional system is larger by a factor of 20 or more. What's more, even under optimistic assumptions regarding the growth of exports, domestic/regional systems will contribute more to growth than will exports for at least 20 years. Finally, these local/regional systems will remain more accessible to smallholder farmers and will serve the nutritional needs of hundreds of millions of poor Africans. Kenya's export export horticulture is rightfully touted as a major success. Yet aspirations to do the same elsewhere must not distract policy makers and donors from the overwhelming importance of the domestic/regional system and its need for aggressive public and private investment to overcome serious problems.

After a burst of enthusiasm through the middle part of this decade regarding the supermarket revolution, there now exists a broad consensus that this phenomenon is likely to proceed much more slowly than once thought in Sub-Saharan Africa. This is especially true in fresh produce, where both the promise and the perils of supermarket expansion have received greatest attention. It is in this sector that supermarkets face the 20/20/20 challenge: across most of the continent, the real value of supermarket sales of fresh produce will need to grow 20% per year for 20 years to reach a 20% market share. In nearly the entire continent, the "traditional" marketing sector – primarily open air markets and dispersed informal vendors – is now expected to play the dominant role in fresh produce marketing for several decades.

These two structural patterns – that for the foreseeable future domestic and regional markets will dominate export markets, and that so-called traditional systems will dominate modern systems within these domestic markets – have two profound policy implications. First, poverty reduction through horticulture, if it is to occur, must take place primarily through traditional systems serving the domestic and regional market. Second, private investment in modern, integrated supply chains cannot be relied upon to solve alone the multitude of problems that increasingly plague these traditional systems over a time frame acceptable to most policy makers and donors. Public engagement, preferably through meaningful public-private partnerships and an accompanying re-definition of public and private roles, will be central to improving these systems.

EMPIRICAL PATTERNS: WHAT FARMERS ARE EXPLOITING THE OPPORTUNITIES PRESENTED BY HORTICULTURAL CROPS? We find six patterns when analyzing fresh produce marketing behavior of smallholder farmers. First, despite far more public support for the maize sector, and more private investment in cash cropping sectors, ***more smallholders typically sell fresh produce than sell cash crops or maize***[3] (Figure 1). In Kenya, 77% of such farmers sell fresh produce. The only exception to this pattern in our three countries is maize in Zambia, driven by the extraordinary support that the government of Zambia has provided to the maize sector.

Figure 1. Share of Households Selling Maize, Cash Crops, and Fresh Produce in Mozambique, Zambia, and Kenya



Second, ***most farmers that sell fresh produce do not sell maize or cash crops*** (Figure 2). To a large extent, then, fresh produce provides agricultural cash income to farmers that do not – whether by choice or lack of opportunity – earn cash income from other crops.

[3] Our basket of cash crops includes cotton, tobacco, sesame, sunflower, coffee, tea, and paprika.

Figure 2. Maize and Cash Crop Marketing Behavior of Fresh Produce Sellers

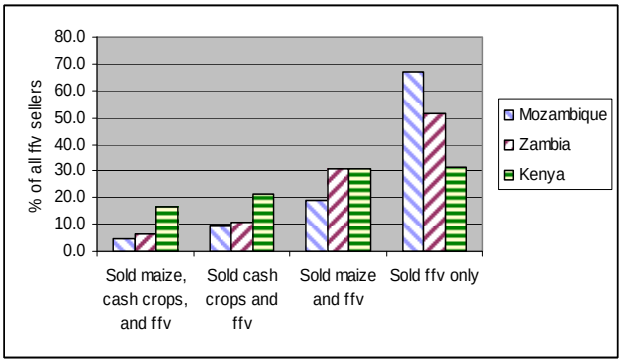
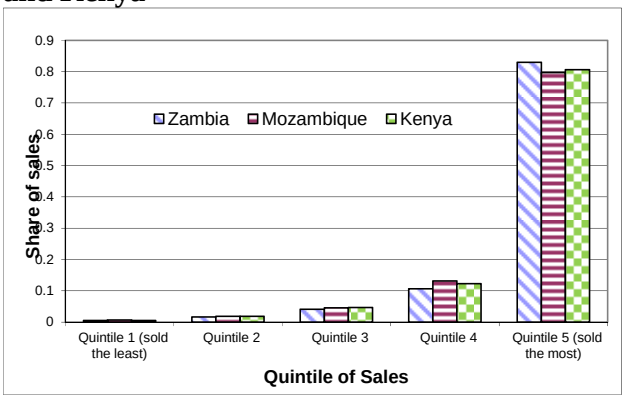


Figure 3. Share of Total Fresh Produce Sales by Quintile of Sales in Mozambique, Zambia, and Kenya

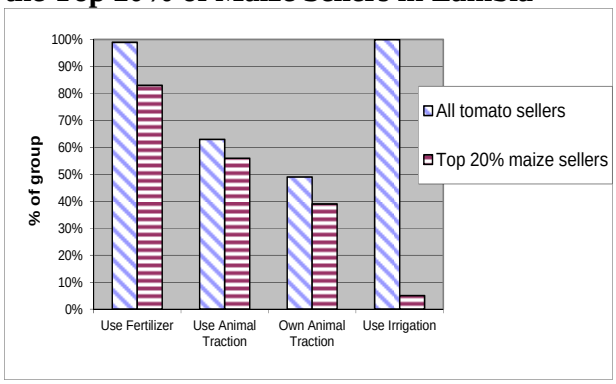


Third, ***sales of fresh produce are extremely concentrated*** (Figure 3). In all three countries, the top 20% of sellers – representing 3% to 4% of all smallholders in Mozambique and Zambia, and 15% in Kenya – account for at least 80% of sales. This concentration is similar to that found in maize and cash crops.

Fourth, ***the typical smallholder farmer selling fresh produce into urban markets is better capitalized and uses more inputs than even the top 20% of maize sellers*** (Figure 4).

These data are based on a random sample of tomato farmers in a representative smallholder area supplying the Lusaka market. More than anything, use of irrigation distinguishes fresh produce farmers; because most vegetables are not well adapted to hot, wet climates, costs of production are dramatically lower in the cool, dry season of southern Africa, but only if the farmers have access to irrigation.

Figure 4. Input Use among Average Tomato Farmers Selling into Lusaka, Compared with the Top 20% of Maize Sellers in Zambia

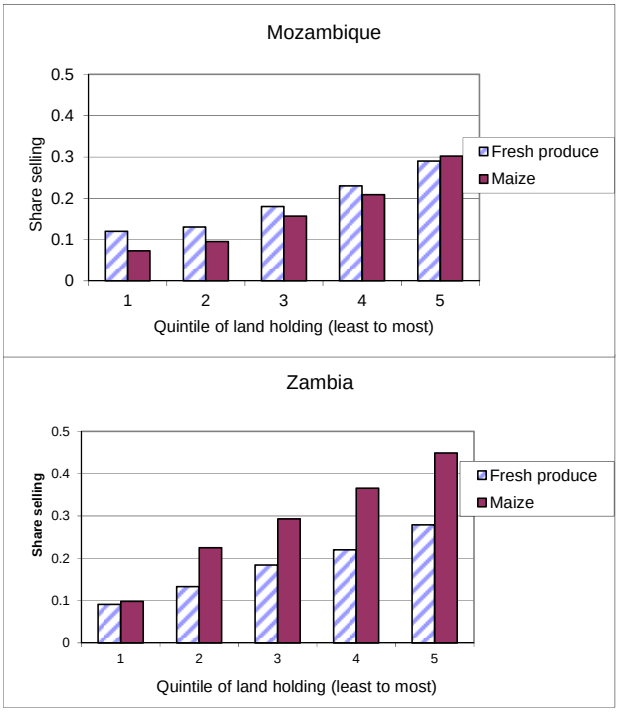


Our key question in this paper is whether horticulture is fulfilling its promise for the most land constrained farmers in east and southern Africa; put differently, are the most land constrained farmers showing themselves able to overcome the constraints to horticultural production and thus exploit the large earnings per unit land area that horticulture offers?

Our fifth finding is that, ***in Zambia and Mozambique, these most land constrained smallholders have largely <u>not</u> been able to exploit horticulture's opportunities*** (Figure 5)**.** In fact, fresh produce looks much like maize in these countries – the probability of selling each rises steadily with land holding size. In these countries, it appears that some combination of constraints on credit (or other means of access to cash to finance input purchases), input availability, production knowledge, irrigation, and (potentially) proximity to market, is preventing land-constrained smallholder farmers from entering the fresh produce market.

Our sixth finding, however, is that ***in Kenya, land constrained smallholders <u>are</u> exploiting horticultural opportunities*** to a much greater degree than in Mozambique and Zambia (Figure 6). Definitive answers to the reasons for the dramatic difference in Kenya require further research, but here we highlight several likely factors, three on the demand side and four on the supply side. On the demand side, Kenya's higher population density likely makes access to markets less of a constraint; Kenya also has higher mean incomes and a larger high income sector in its cities, meaning higher overall demand.

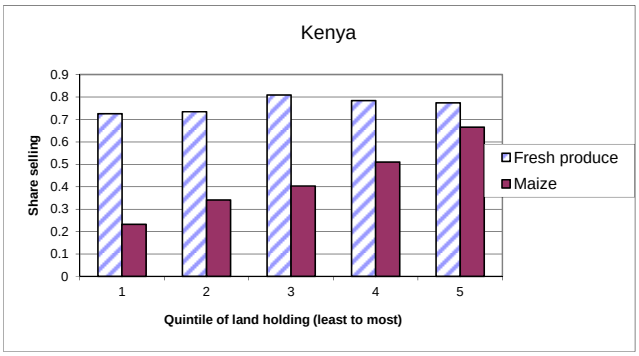
Figure 5. Relationship between Land Holdings and Probability of Selling Maize and Fresh Produce in Mozambique and Zambia



On the supply side, agroecology is more favorable in Kenya, where highland areas provide cooler climates that make fresh produce less susceptible to pest attacks; smallholders in Kenya are much more likely than in Zambia or Mozambique to earn off-farm income, providing cash to finance input purchases; input use in general is much higher in Kenya than in the other two countries, meaning that more farmers are already accustomed to some of the practices needed to effectively manage horticultural production; and levels of education in rural Kenya are also much higher than in Mozambique or Zambia; we find that education is a more important explainer of horticultural commercialization than it is for other crops.

CONCLUSIONS: We reach three key conclusions from this analysis. First, poverty reduction at scale through horticulture, if it is to occur, must take place primarily through traditional channels serving domestic and regional markets. Efforts to help smallholders enter modern supply chains, including those for exports to developed countries, are appropriate in some circumstances. Yet these efforts must not distract attention from the overarching need to improve the vast traditional systems serving domestic consumers; improvements in these systems will benefit millions – rather than thousands – of African farmers and consumers.

Figure 6. Relationship between Land Holdings and Probability of Selling Maize and Fresh Produce in Kenya



Second, turning horticulture into an engine of poverty reduction for the most land constrained smallholder farmers requires improved access to inputs, improved access to credit to finance those inputs, improved knowledge of how to use those inputs, and access to irrigation so that they can produce during the cool-dry season. Because sustainable smallholder irrigation typically requires cooperation among users, support to farmer organizations may play an especially important role in horticulture.

Finally, because horticulture offers unique opportunities to land-constrained farmers, and because women are typically the most land-constrained, special effort must be made to address constraints for women farmers to avoid excluding them from this promising activity.

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