

# Opportunities and Challenges for Smallholder Success in Peri-Urban Agriculture in Sub-Saharan Africa

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# Outline of presentation

- ☑ **Peri-urban agriculture**
  - ☐ Opportunities for high value peri-urban agriculture in SSA
  - ☐ Some success stories
  - ☐ Issues and challenges
  - ☐ Conclusions and implications
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# Peri-urban agriculture (PUA)

- In many developing regions, a “silent revolution” in production, processing and marketing of high value perishable commodities – e.g., vegetables, fruits, meat, milk, eggs and fish – is occurring
    - Comparable in magnitude to the Green Revolution
    - Much of this in peri-urban areas
  - Process driven by
    - Population and rapid income growth
    - Urbanization
    - Growth in export demand
    - Trade liberalization
    - Openness to foreign investment
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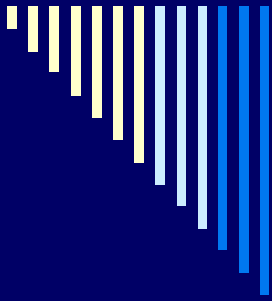
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# Opportunities for PUA in SSA

- The same factors causing growth in high-value PUA elsewhere are providing opportunities in SSA:
    - Population growth >2%/year
    - Income/capita growing moderately on average in SSA; usually more rapidly in urban areas
    - Rapid urbanization – about one-third of population of SSA in urban areas currently, nearly one-half projected by 2030
    - Growing demand for high-value commodities in industrialized and rapidly growing middle income countries; high costs and constraints limiting production growth in many of these countries
    - Comparative advantages of African producers – relatively low cost land, labor, favorable climate and soils in many peri-urban areas
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- Trade policies of EU favor African least developed countries (LDCs)
    - 1975 Lomé Convention – duty free access to most exports of Africa, Caribbean and Pacific (ACP) countries
    - 2000 Cotonou Agreement – expands preferential access to exports of all LDCs by 2008
  - Foreign investment strongly contributing to development of high value PUA in several countries; e.g.,
    - Horticulture in Kenya, Côte d'Ivoire, and Ethiopia
  - Other key contributing factors to success (not always present in SSA):
    - Maintenance of favorable investment climate – i.e., security, macroeconomic stability, realistic exchange rates, limited government interference
    - Historical experience, local market development
    - Presence of entrepreneurs with market connections
    - Access to production and marketing infrastructure
    - Access to land, technical assistance, inputs and credit
  - These factors are illustrated by some success cases
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# Some success stories of PUA in SSA

- Smallholder horticulture in Kenya
  - Smallholder dairy in Kenya
  - Other success stories and potential success stories
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# Smallholder horticulture in Kenya

- ❑ Since the early 1970s, value of Kenyan fruit and vegetable exports has more than quadrupled
  - ❑ Kenya is second largest exporter of fresh vegetables and largest exporter of flowers to Europe (smallholders less involved in flowers)
  - ❑ Horticultural crops now Kenya's leading foreign exchange earner (20%); accounted for 2/3 of growth of ag exports between 1980 and 2000
  - ❑ Smallholders account for >50% of horticultural exports, more of production for domestic market
  - ❑ Only about 15% of value horticultural production (4% of volume) was exported in 2001
  - ❑ About 100,000 smallholders produce horticultural crops for export market
  - ❑ About 100,000 workers directly employed by the horticultural export industry; 60% are women
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# Impacts of smallholder horticulture

- Horticultural production has very favorable impacts for smallholders and workers:
    - Highly profitable land use – gross margins per hectare as much as 20 times higher for vegetables than maize-beans intercrop
    - Per capita incomes of French beans producers > double those of other farmers, despite similar farm sizes and assets
    - Poverty rates lower among smallholders growing horticultural crops for export
    - Wages and benefits of horticultural industry workers higher than minimum wage and national average
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# Impacts of smallholder horticulture

- Horticultural and other high value production contribute to improved land management
    - Greater use of inorganic fertilizer and organic inputs
    - More investment in soil and water conservation, “more people, less erosion”
    - Most farmers in highlands of central Kenya perceive soils to be improving, compared to widespread perceptions and evidence of degradation in western highlands
  - Increased consumption of horticultural crops has improved diets of millions of Kenyans
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# Development of horticultural sector

- Historical roots in colonial period
    - East African Agricultural and Horticultural Society founded in 1901
    - First horticultural experiment station established in 1911
    - Production for domestic use and exports stimulated by WWII - import controls and provision of dehydrated vegetables to Allied Forces
    - Investment by two British companies in pineapple canning after the war
    - Swynnerton Plan promoted involvement of smallholders in export crop production in 1950s
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# Development of horticultural sector

- Rapid expansion in post-colonial period, stimulated by
  - Land reform
  - Facilitative (non-regulatory) role of government – Horticultural Crops Development Authority established in 1967
  - Foreign investments by Del Monte and other investors, encouraged by government – but led to reduced purchasing of pineapples from smallholders
  - In late 1970s, production and exports of other fruits and vegetables began growing rapidly, due to falling prices of coffee and tea and demand for “Asian vegetables” in UK by Asian refugees from Uganda
  - Social ties of Asian traders in Kenya to Asian buyers in UK and experience producing for domestic Asian market in Kenya contributed to success
- Other factors contributing to development:

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  - Development of tourism
  - Contract farming



# Development of horticultural sector

- Recent changes in export market, new challenges
    - Increasing concerns about food safety, quality and convenience, health and environmental concerns
    - Increased sanitary and phytosanitary safety (SPS) regulations by importing country governments
    - Proliferation of certification schemes
    - Increased vertical coordination of agricultural supply chains, growing power of supermarkets
    - Competition from lower cost producers like Ethiopia
    - Changes in trade policies of EU eliminating advantages of Kenyan producers (Kenya not a LDC)
  - Kenyan producers and exporters have responded well to these challenges, emphasizing quality
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# Smallholder dairy in Kenya

- ❑ 600,000 smallholders raise dairy cows in Kenya
  - ❑ Per capita milk production double that in the rest of Africa
  - ❑ Annual net earnings from milk average \$370
  - ❑ Dairy production not only in peri-urban areas, but more intensive and productive in these areas
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# Development of dairy sector

- Smallholder dairy also has roots in colonial period
    - Colonial government supported dairy production from early 1900s with provision of artificial insemination (AI), veterinary services, medicines and pest control
    - Cooperative societies began in 1912, merged into Kenya Cooperative Creameries (KCC) in 1931
    - Dairy price supports began during WWII
    - A 3 tier quota and pricing system established in 1954, with higher prices to producers who could guarantee supplies for entire year or season
    - Swynnerton Plan initiated efforts to increase production by African smallholders, through provision of improved animals, training in animal husbandry and other services
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# Development of dairy sector

- After independence, smallholder production grew rapidly due to
    - Land reform
    - Subsidized government support for AI, tick control, veterinary services until late 1980s
    - Abolition of 3 tier quota system and establishment of uniform (pan territorial and pan seasonal) price system, enforced by monopoly power of KCC
  - Increasing problems led eventually to liberalization of milk marketing in 1992
    - Despite regular increases in official prices, real prices declined an average of 1.4%/year to early 1990s
    - Financial difficulties of the KCC led to delays in payments and undermined primary coop societies
  - Liberalization nearly tripled effective farm level prices and led to rapid investment in processing
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# Some other success stories and potential success stories

- Ethiopian horticultural exports rapidly growing (especially cut flowers)
    - Government investment incentives
    - Low labor costs
    - Transportation cost advantages to Europe
    - Less of a smallholder phenomenon
  - Côte d'Ivoire is second largest fruit exporter in SSA – mainly bananas and pineapple
    - Limited involvement of smallholders in export bananas
    - Smallholders dominate pineapple production due to lower investment costs
    - Côte d'Ivoire will face increased competition from non-ACP countries due to change in EU preferences
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# Other success stories and potential success stories

- Horticultural exports are important in Zambia, but smallholder role has declined
    - Accounted for 40% of agricultural exports in 2001
    - Exports have declined in recent years due to unfavorable exchange rate and transport cost advantages of competitors
    - Export companies have stopped contracting with smallholders in recent years
  - Dairy and intensive poultry production have high potential in peri-urban areas of East Africa
  - Woodlot production has high returns in peri-urban areas of East Africa
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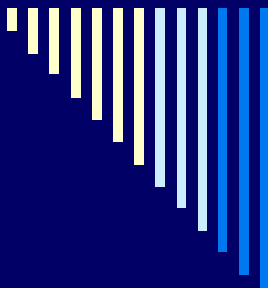


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# Issues and challenges to expanding successes

- Production issues
  - Marketing issues
  - Social and environmental issues
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# Production issues

- Success requires ability to produce profitably and sustainably and to cope with risks
  - These depend on access to/cost of key resources
    - Land
    - Water
    - Labor
    - Germplasm
    - Other inputs and credit
    - Knowledge
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# Production issues

- Land access
    - Land reform played a key role in Kenya, but may not be as feasible in other cases, and can undermine tenure security
    - Improving functioning of land markets can help in many cases
  - Land tenure security is critical, especially for perennial crops
    - Formal land titling not generally a pre-requisite for tenure security, and sometimes undermines it
    - Still, demand for titles likely to be greater in peri-urban than rural areas
  - Low and declining soil fertility in much of SSA may undermine potential for high value PUA
    - High value production can increase investment in soil conservation and soil fertility management, as seen in Kenya, but always the case (e.g., in Uganda)
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# Production issues

## □ Access to irrigation

- Critical for many high value crops, especially in drylands, supplementary needed in more humid areas
  - Availability of irrigation limited in SSA (only 4% of arable land irrigated; 30% of potential)
  - But dramatic expansion in large scale irrigation likely limited due to many constraints
    - Most irrigable land in humid areas
    - High investment costs - \$5,000 – 20,000/ha
    - Often disappointing returns to irrigation investments
    - Social and environmental impacts of irrigation
  - Reliance on low cost efficient methods of water harvesting and small scale irrigation more feasible in most cases
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# Production issues

- Labor availability and costs
    - Although labor generally cheaper in SSA than in developed countries, critical labor constraints faced at peak demand times
    - Labor costs/constraints usually higher in peri-urban than rural areas due to non-farm activities
    - Labor constraints especially severe for women, HIV-affected, other vulnerable households
    - More emphasis on returns to labor in promoting ag technologies needed (generally favors high value ag)
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# Production issues

- Availability of high quality germplasm
    - Technology development and dissemination, responsive to the local demand, is essential
    - Government and donor support for development and provision has played a key role in some cases (e.g., smallholder dairy)
  - Availability and cost of other inputs, credit
    - Input subsidies have helped in some cases, but often don't reach smallholders and unsustainable
    - For profitable high value products, subsidies usually less important than availability of suitable quantities and qualities at the right time, and access to credit
    - Government policies and regulations in many cases undermine input availability and increase costs
    - Contract farming has helped many smallholder producers of high value products to obtain access
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# Production issues

- Smallholder knowledge
    - Traditional top-down government research and extension approaches for staples not well suited to high-value products
    - Alternative pluralistic extension models focusing on farmer empowerment and higher value commercial opportunities being tested, with promising results
      - NAADS in Uganda
      - Fadama II project in Nigeria
      - Sub-Saharan Africa Network for Ag Advisory Services (SSANAAS)
    - Alternative models of demand responsive and pluralistic research for development also being developed and tested
      - SSACP a primary example
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# Marketing issues

- Marketing issues especially and increasingly important for high value perishable products
    - Reliability of supply
    - Product quality
    - Food safety
    - Traceability
    - Regulation of processing and marketing practices
  - Strategies used by buyers to ensure reliability and quality of supply include
    - Importing raw materials (e.g., powdered milk in West Africa)
    - Developing informal relationships with suppliers
    - Establishing contracts with suppliers
    - Vertical integration
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# Marketing issues

- Contract farming increasingly used for exports and high value domestic markets, especially horticultural crops
  - Ensuring contract compliance a major challenge
    - Incentives of both parties to renege if prices specified and prices change
    - Transaction costs of negotiating, monitoring and enforcing contracts can be prohibitive, especially for contracts with many smallholders
    - Effective farmer organizations that can help ensure compliance and reduce transaction costs is a key for smallholders to benefit
  - Farmer organizations also help to increase smallholders' bargaining power
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# Marketing issues

- Vertical integration is increasing for high value export commodities – increasing role of supermarkets in regulating food production as well as marketing
  - Increasing concerns about food safety and quality, health and environmental impacts have led to increased public regulations; e.g.
    - Stringent EU requirements on maximum residue levels of pesticides in fresh produce
    - Tighter regulations on SPS, product quality and “good agricultural practices” (GAP)
  - In many cases, private standards and codes are more critical for exporters; e.g.
    - EUREPGAP, standards of a group of retailers
    - Other private certification schemes increasingly important - e.g., organic, fair trade, etc.
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# Marketing issues

- There are many barriers to smallholders in SSA benefiting from the opportunities in these certification schemes
    - High cost of compliance and obtaining certification
    - Lack of accredited certification bodies
    - Lack of knowledge of required practices
    - Production and marketing risks
  - Effective farmer organizations, capacity strengthening and supportive policies needed for African smallholders to benefit
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# Social and environmental issues

- Concerns about social and environmental impacts of agricultural practices in exporting countries have contributed to new standards and certification schemes
  - Such schemes, linked to contracts with smallholder organizations, can have important benefits; e.g., in Madagascar
    - 10,000 small vegetable producers benefiting from production assistance through contracts with an export company
    - Adoption of improved production and natural resource management practices
    - Positive spillovers to rice productivity
    - Significantly higher and more stable incomes
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# Social and environmental issues

- Peri-urban and urban agriculture are important sources of food and nutrition (especially proteins, micronutrients, fats) for millions in SSA; e.g., accounting for
    - 90% of leafy vegetables and 60% of milk sold in Dar es Salaam
    - Similar high shares of milk consumed in Nairobi and Addis Ababa
  - Peri-urban and urban agriculture provide environmental services, such as
    - Recycling nutrient-rich wastes
    - Providing green spaces and habitat for wildlife, other environmental amenities
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# Social and environmental issues

- However, there are substantial health and environmental risks posed by PUA:
    - Poisoning and water pollution caused by heavy use of agro-chemicals
      - WHO estimates 300,000 deaths per year due to pesticide poisoning, though most are suicides
      - Chronic health effects severe; e.g., up to 2/3 of potato growing households in Carchi, Ecuador show significant nervous system impairment from pesticide exposure
      - Nitrates and nitrites among most common pollutants in drinking water where fertilizers used intensively
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# Social and environmental issues

- Health and environmental risks posed by PUA (cont.):
    - Irrigation contributes to increased exposure to water-borne diseases (e.g., cholera) and vector-borne diseases (e.g., malaria, schistosomiasis):
      - Prevalence of malaria 54% higher in Hola cotton and vegetable irrigation scheme in Kenya than in nearby rainfed areas
      - After completion of Diama Dam in Senegal, virtually entire population upstream of dam became infected by schistosomiasis
    - Use of wastewater for irrigating crops in urban and peri-urban areas poses substantial health risks, especially for leafy vegetables
    - Air pollution also can contaminate fresh produce
      - A study of urban farming in Kampala found high levels of heavy metals in leafy vegetables grown within 30 m of main roads
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# Social and environmental issues

- Intensive animal agriculture in peri-urban and urban areas poses major risks to human health and the environment
    - Risks of transmission of animal diseases (e.g., avian flu, Rift Valley Fever, salmonellosis, swineherds' disease, brucellosis, hepatitis E) to humans where have dense populations of both close together
    - Livestock wastes are major sources of water and air pollution in urban and peri-urban areas, contributing to
      - Gastrointestinal diseases
      - Respiratory ailments
      - “Blue baby syndrome”
      - Cognitive impairments due to growth of *Pfiesteria*
      - Eutrophication and ecosystem damage
    - Many of these pollution problems are likely less severe in smallholder production, which is more dispersed and less intensive
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# Conclusions and implications

- There are major opportunities for smallholders in peri-urban areas to increase incomes, improve diets, and manage natural resources more sustainably through high value PUA
  - The driving forces leading to success stories in Kenya and elsewhere are expected to continue
  - To take advantage of these opportunities, many challenges must be addressed, such as
    - Maintaining security and a stable macroeconomy
    - Reducing policy barriers, uncertainty and corruption
    - Assuring smallholders secure access to productive assets, technologies, information, markets and appropriate institutions
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# Conclusions and implications

- Many of these challenges similar to those facing smallholders in rural areas
  - But some issues are particularly relevant to PUA:
    - Unlike the Green Revolution for staple crops, the “silent revolution” for high value commodities driven mostly by demand changes
    - Access to sufficient and suitable quality land and water are particularly important constraints in peri-urban areas
    - The main challenge facing smallholder producers of high value commodities is how to overcome barriers to entry in value chains
    - The health and environmental risks posed by PUA are very serious and likely to become increasingly so
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# Conclusions and implications

- ❑ Agricultural research cannot address all of these challenges
  - ❑ But AR4D programs must take these opportunities and constraints into account, and have an important role to identify and help address key constraints
  - ❑ Given the demand driven nature of the silent revolution, a different model for technology development and transfer is needed
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# Conclusions and implications

- The new model should be
    - Demand oriented
    - Pluralistic Empower farmers
    - Address opportunities and constraints throughout the value chain
    - Promote efficient use of water, land, labor and other scarce resources
  - The pioneering efforts of the SSACP, SSANAAS, and various country reforms of research and extension systems are examples of this direction
  - For the lessons from such efforts to be effectively learned and used to help scale up successes, adequate investment in monitoring, evaluating, assessing impacts and sharing information is needed.
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