12th ANAPRI STAKEHOLDERS CONFERENCE

Unlocking Agricultural Transformation through Commercialized Smallholders: Evidence from Rural Kenya

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Background

- MS farms are rising fast -- a new force reshaping how Africa produces, trades, and hires
- Not just big vs. small: a cadre of commercial smallholders is quietly powering sales, services, and local jobs
- But who gains nearby? Impacts on neighboring non-commercial smallholders are mixed and under-studied
- This study tests how commercialized MS and SS farms affect productivity and household incomes in their vicinity
  - Kenya: Makueni, Taita Taveta, Kisumu, Kakamega
  - N=1995

Study objectives

- **Profile** the characteristics of commercialized smallholders (SS) and medium-scale (MS) farmers
- **Measure neighborhood effects** -- how the local concentration of commercialized SS/MS farms influences nearby non-commercialized smallholders
- **Translate evidence into action** -- clear policy and investment priorities for national and county governments to accelerate rural and agrifood transformation

Methods

- **Descriptive statistics** -- Characteristics of commercialized smallholders and medium-scale farmers vs non-commercialized farmers.
- **Econometrics** -- how the local concentration of commercialized SS/MS farms influences nearby non-commercialized smallholders.

$$inc_i = \alpha + \boldsymbol{X}\beta + \boldsymbol{Z}\gamma + \boldsymbol{C}\delta + \theta S_i + \varepsilon_i$$

✓ S_i -- Concentration of commercialized farm measure

✓ $\boldsymbol{X}$ -- Vector of household head demographic characteristics – age, education, gender

✓ $\boldsymbol{Z}$ – Vector of household-level factors- experience in farming, assets, and land access

✓ $\boldsymbol{C}$ -- Vector of community-level variables

Key definitions

- **Small-scale** (SS) farmer: Operates < 3 hectares
- **Medium-scale** (MS) farmer: Operates => 3 to 50 hectares
- **Commercialized farmer**: Produces primarily for sale, with investment in productive technologies (e.g., irrigation, greenhouses, improved seed, fertilizer)
- **Stepping-up MS farmer**: A household that started as small-scale and expanded to medium-scale through on-farm growth
- **Stepping-in MS farmer**: A household whose main livelihood was non-farm, which entered farming directly at medium-scale using non-farm earnings

Understanding the characteristics of commercialized SS and MS farmers

Demographic characteristics

Demographic Characteristics	A < 3 ha, not commercialized	B < 3 ha, commercialized	D = > 3 ha, commercialized	
			Stepping-up	Stepping-in
Age of household head [median]	54.0	53.0	57.0	61.0
% male headed	71.1	82.2	72.1	82.7
Farming experience (years) [median]	22.0	23.0	21.5	27.0
Head's education (years) [median]	8.0	8.0	8.5	12.0
Average education of household members (years) [median]	8.4	9.3	11.3	10.5

Land ownership and use

Land ownership and use	A < 3 ha, not commercialized	B < 3 ha, commercialized	D = > 3 ha, commercialized	
			Stepping-up	Stepping-in
Initial landholding size when started farming (ha)	0.4	0.4	1.4	1.4
Current landholding size (ha)	0.4	0.8	2.5	4.1
Current land controlled (ha)	0.5	1.2	4.7	5.6
Current land operated (ha)	0.3	0.8	4.3	4.4
Cultivated land size (ha)	0.3	0.8	4.0	3.4
Rented-in land (ha)	0.3	0.4	3.4	1.7
% of households that purchased land in the past 10 years	12.0	13.4	38.9	32.4
Hectares of land purchased over the past 10 years among those that purchased (median)	0.4	0.5	0.4	1.3
% of controlled land currently operated	67.7	76.6	90.6	84.4
Years since began operating => 3 ha of land (median)			5.5	12.0

Farm inputs use intensity

Input use	A < 3 ha, not commercialized	B < 3 ha, commercialized	D = > 3 ha, commercialized	
			Stepping-up	Stepping-in
Labor days per hectare cultivated [median]	110.0	80.0	26.4	25.2
Households using inorganic fertilizer (%)	46.4	71.1	90.0	70.5
Inorganic fertilizer kgs applied per ha cultivated [median] – users only	192.3	171.9	254.6	198.7
Chemical input expenditure (KSh/ha cultivated) [median]	0.0	1,273	2,552	2,167
Households renting in farmland (%)	11.5	26.0	60.6	32.6
Land rental rate per hectare (KSh/ha) [median]	20,000	20,000	17,500	25,000
Daily wage rate for farm labor (KSh) [median]	300.0	300.0	300.0	300.0
Households using tractor for tillage (%)	22.2	37.5	72.2	52.7

Farm production and productivity ('000KSh)

Farm production (thousand Ksh) [median]	A < 3 ha, not commercialized	B < 3 ha, commercialized	D = > 3 ha, commercialized	
			Stepping-up	Stepping-in
Total value of crop output	18.6	78.2	905.3	433.9
Total value of crop output per ha cultivated	75.5	119.4	227.8	143.2
Total value crop output per labor day	0.6	1.3	7.5	4.7
Total value of livestock output	3.5	13.5	6.2	69.5
Total value of farm output	29.7	113.0	905.3	549.7
Total value of farm output per hectare operated	96.8	147.8	189.6	142.9

Crops and livestock income & industrial crops

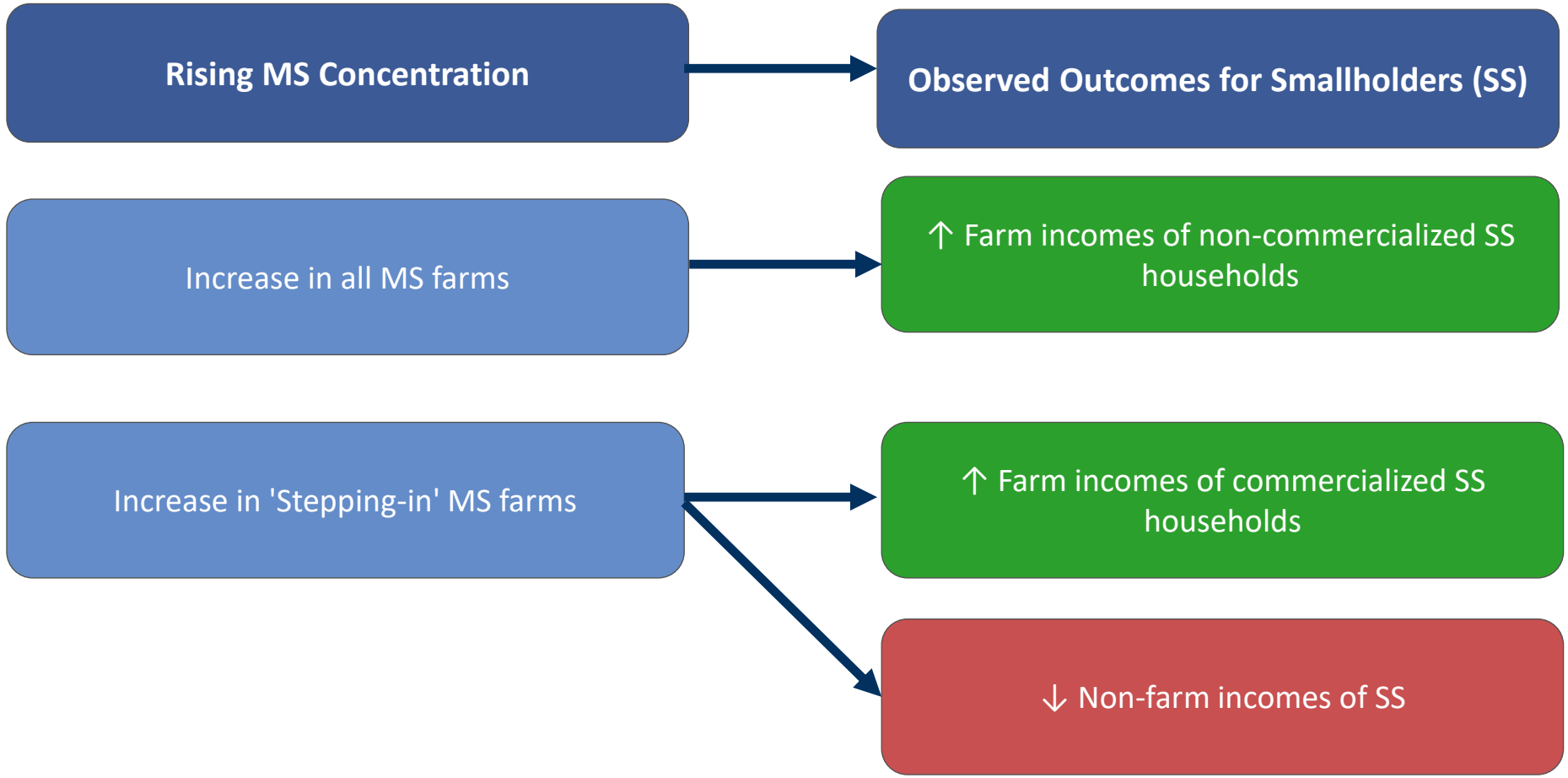
Commercialization	A < 3 ha, not commercialized (n=632)	B < 3 ha, commercialized (n=1268)	D = > 3 ha, commercialized	
			Stepping-up (n=18)	Stepping-in (n=74)
% share of agricultural income in household gross income	27.2	52.6	87.9	68.4
Household commercialization index (HCI)-crops (% of crop production value that was sold)	12.8	48.5	70.3	66.9
Industrial crops				
% of households producing industrial crops	6.2	22.9	33.3	44.6
% share of industrial crops in agricultural gross income	2.6	35.4	79.0	61.8

Use of resilience and sustainable land management practices

Resilience and sustainable land management practice	A < 3 ha, not commercialized (632)	B < 3 ha, commercialized (1268)	D = > 3 ha, commercialized	
			Stepping-up (n=18)	Stepping-in (n=74)
	----------% of households----------			
Irrigation	9.6	29.4	37.9	36.3
Zero tillage	2.5	4.3	10.7	5.8
Cereal-Legume rotation	22.0	33.5	37.9	36.6
Intercropping	80.7	74.7	61.4	76.7
Fallowing	11.9	16.2	15.0	29.6
Organic matter (e.g manure, compost) and organic fertilizer	49.8	60.0	66.4	71.8

Understanding how the concentration of commercialized farms – both MS and SS - - is affecting non-commercialized small-scale farms around them

Commercialized Medium-Scale (MS) Farms: Summary of Effects



Summary of the main findings

- **Land markets drive scaling** -- Rental and purchase markets are the main pathway through which farms expand to medium scale.
- **MS farms are more commercial** -- They sell a larger share of output and use more services than SS farms.
- **MS farms are more productive** -- Higher land and labor productivity relative to SS farms.
- **Positive neighborhood effect (on-farm)** -- MS farms (especially the stepping-in) are linked to higher farm incomes for nearby smallholders.
- But off-farm incomes dip -- Stepping-in MS presence is associated with lower non-farm incomes among nearby non-commercialized smallholders.

Policy takeaways

1. **Make land markets work**: streamline rental and sales so productive farmers can expand, lifting land/labor productivity and unlocking local service jobs.
2. **Unblock input and service supply**: ensure affordable, reliable fertilizer/seed/irrigation and advisory/repair services to multiply upstream and downstream employment.
3. **Diversify beyond staples**: back higher-value crops and mixed systems to broaden SME opportunities in processing, aggregation, and cold chain while stabilizing incomes.
4. **Invest in connective infrastructure**: improve rural roads, storage, and digital connectivity to cut costs and attract traders, millers, and logistics firms that create jobs.
5. **Back entrepreneurial inclusion**: tailor finance and programs for both "stepping-up" smallholders and "stepping-in" entrants, with safeguards so nearby smallholders share the gains.

THANK YOU

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