Long-term changes in Uganda's soil health conditions and women's responses to land degradation: *A contribution to the African Fertilizer and Soil Health Action Plan 2024-2034*

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Data sources

First Round survey: 2003

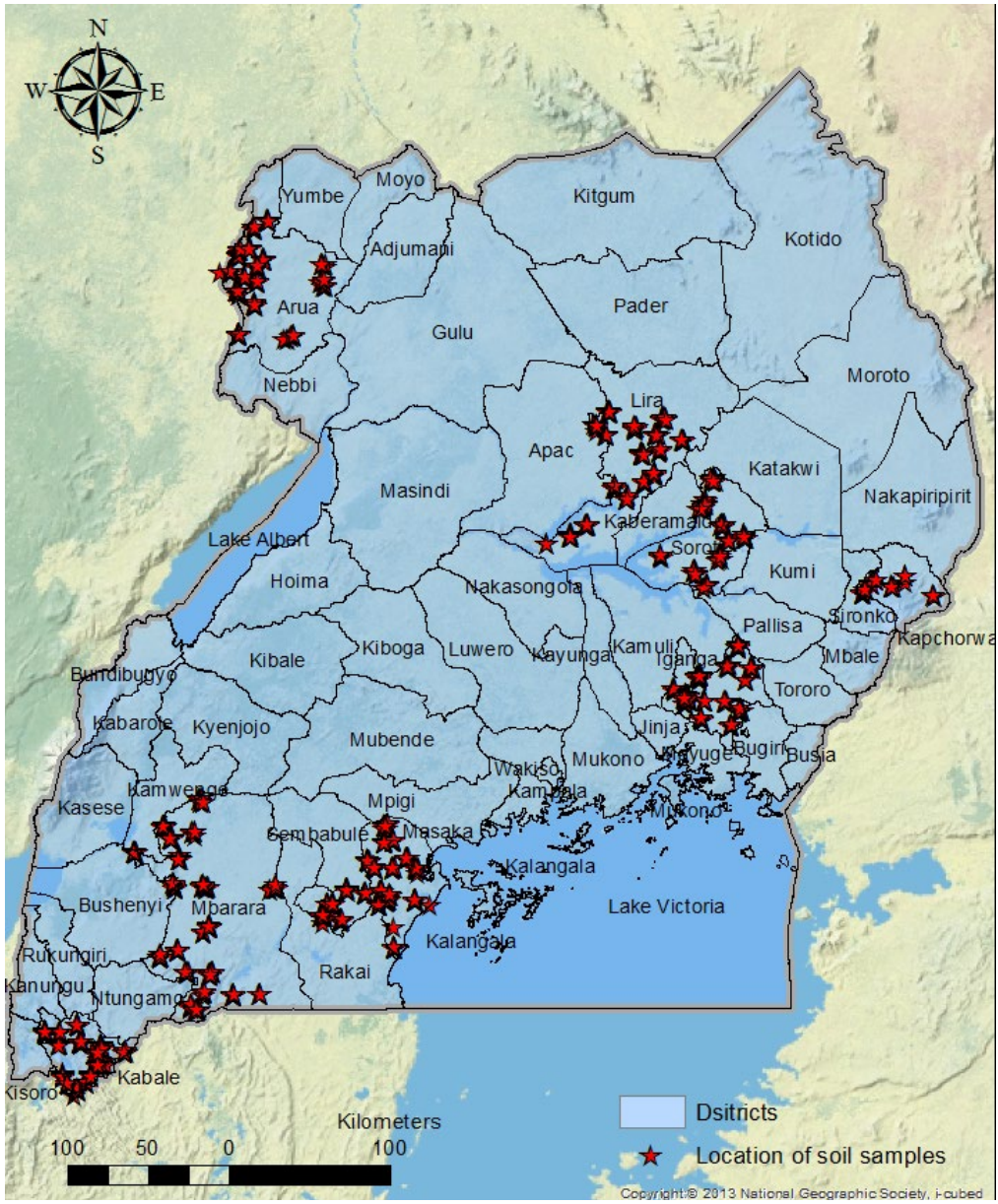
- Cross sectional household and plot survey (led by IFPRI)
- Soil samples collected and analyzed in Uganda

Second Round survey: 2013

- Cross sectional household and plot survey (North Carolina U.)
- Soil samples collected and analyzed in Uganda

Third Round survey: 2024

- Panel survey led by IFPRI and NARO



Household attrition

→ Attrition 8% between 2003-2024 (compared to 0.6% between 2003 and 2013); due to migration, family dissolution and death

				Attrition rates	
Wave	**2003**	**2013**	**2024**	**2003-2013 (Short term attrition)**	**2003-2024 (Long term attrition)**
Number of households	**849**	**844**	**785**	**0.6%**	**8%**

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Feminization of agriculture requires greater attention to women farmers for soil health interventions

→ Share female headed households increased to 31% by 2024

	Survey Wave		
Year	2003	2013	2024
Number of households	849	844	785
Share female headed	20%	26%	31%

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Only a small share of plots receives SLM practices

→ Crop rotation is the dominant practice, followed by deep tillage

	Men's plots	Women's plots	Joint plots
Men more likely to use:			
Irrigation	1%	0%	1%
Inorganic fertilizer	9%	5%	10%
Mulching	10%	8%	11%
Incorporating crop residues	14%	13%	15%
Women more likely to use:			
Applying animal manure	13%	15%	15%
Zero tillage	11%	13%	11%
Deep tillage	31%	36%	32%
Household refuse	5%	7%	6%
Crop Rotation	33%	**47%**	42%
Pesticide applications higher than fertilizers			
Herbicides	10%	6%	9%
Other pesticides	14%	16%	21%
Contour ploughing	3%	3%	4%

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While action on soil health has increased, overall shares have remained low (plot-level data)

→ Generally, less than one third of plots benefits from practices

SLM Practice	2003	2024	Change in 20 Years
Irrigation	0.2%	1.0%	Increased 5x but still very low.
Fallow	19.8%	1.9%	Declined substantially
Crop Rotation	19.8%	38.6%	Dominant practice
Crop residues	10.0%	13.6%	
Mulching	6.0%	9.8%	
Applying animal manure	7.0%	14.2%	Increased doubled
Composting	1.3%	1.4%	No change
Household refuse	5.8%	4.9%	No change (small decline)
Zero tillage	2.5%	11.6%	Increased by a factor of 4
Deep tillage	10.7%	32.6%	Increased by a factor of 3
Inorganic fertilizer	3.0%	8.3%	Increased nearly 3 times but still low
Pesticides use	3.0%	16.7%	Increased by a factor of 5

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Agroforestry remains an important land management strategy

→ But substantial reduction in use on women's plots

	Men's plots	Women's plots	Joint plots
% Agroforestry			
2003	41%	54%	26%
2013	65%	58%	70%
2024	54%	43%	56%
Change (2003-2024)	+13%***	-11%**	+30%***

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Substantial increase of plot-level use of fertilizers & organic inputs

→ Fertilizer applications remain larger/increased more on men's and joint plots

	Men's plots	Women's plots	Joint plots
% Fertilizer use			
2003	1.4%	0.8%	0.0%
2013	3.4%	0.0%	0.0%
2024	9.0%	5.0%	10.0%
Change (2003-2024)	+8%***	+4.2%***	+10%***
% Organic Inputs			
2003	29%	16%	7%
2013	12%	6%	4%
2024	28%	29%	31%
Change (2003-2024)	-1%	+13%***	+24%***

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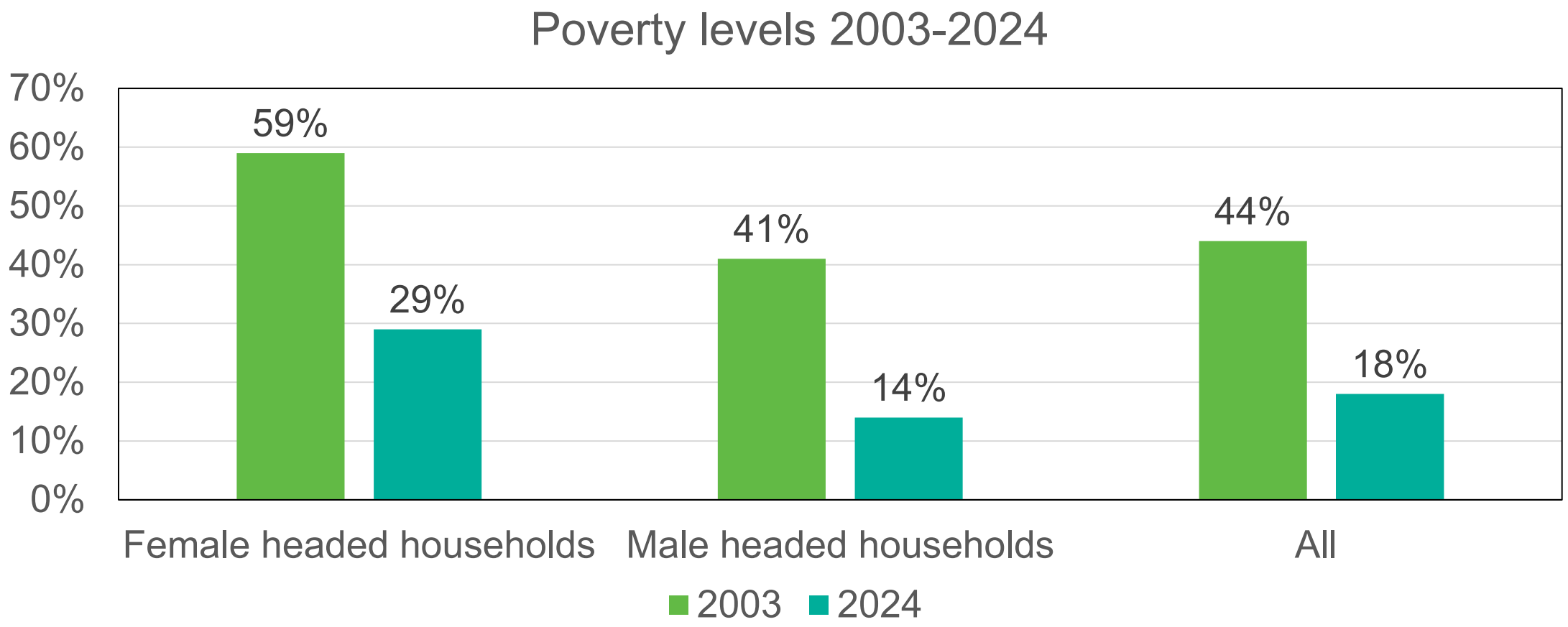
Changes in poverty levels

→ Substantial decline between survey rounds but higher share of female headed households that have remained poorer affects poverty reduction; their limited access to and use of agricultural inputs likely contributes to slower decline



Conclusions

- A large range of sustainable land management practices can be found, but shares of use are low for most practices; and management practices differ by gender
- Application of most practices increased over time, with some exceptions, such as fallow
- Agroforestry use remains an important practice, but its use has reduced on women's plots
- Inorganic fertilizer use increased, but more slowly on women's plots
- Important to further pivot efforts on sustainable land management toward women, due to increased feminization of agricultural systems; this can also further accelerate changes in rural poverty rates

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Next steps

- Integration of biophysical with socioeconomic data
- Providing input to the localization of the African Fertilizer and Soil Health Strategy in Uganda
- Developing an action plan that improves access, benefits and achievements of women farmers to support multiple development outcomes for everyone

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Thanks