MAINSTREAMING SUSTAINABLE LAND MANAGEMENT (SLM) IN AGRICULTURAL EXTENSION AND ADVISORY SERVICES: SLM BENEFITS

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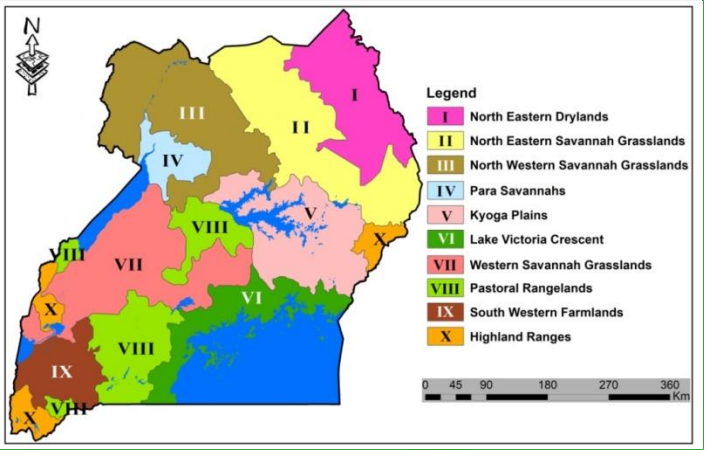
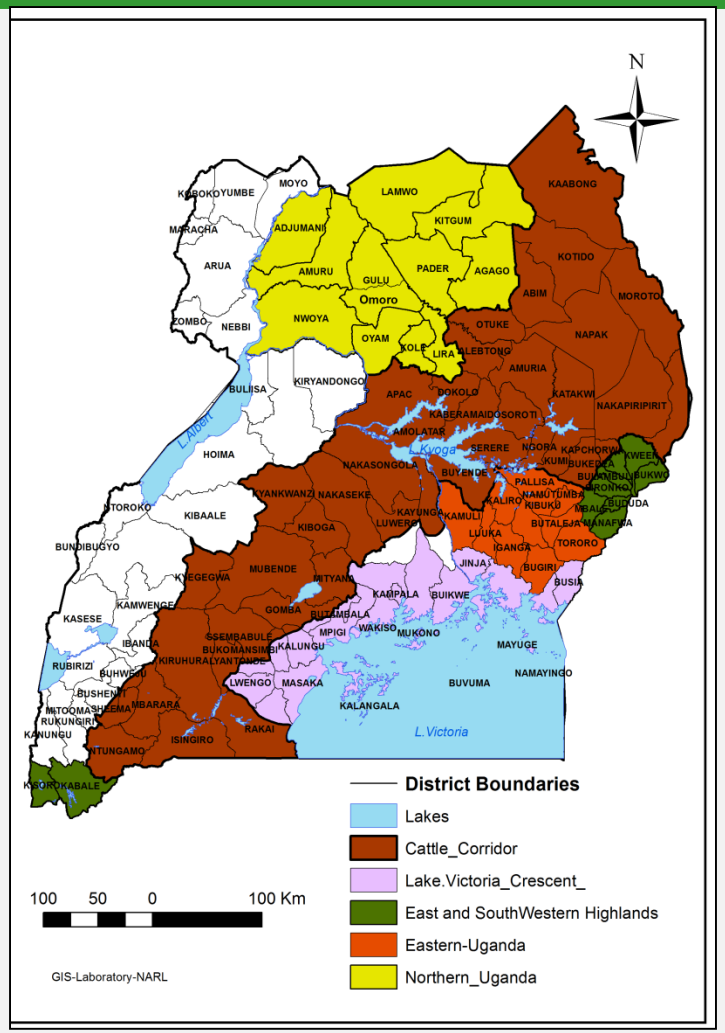
Introduction

- Uganda has a total area of 241,551 km^2 of which about 46% is degraded and 10% is highly degraded (Magunda et al., 2004).
- It is estimated that 80% of Uganda's land is arable, but only 35% is being cultivated.
- The country's agricultural production system is diverse and spread within 10 Agricultural Production Zones (APZs).
- Poor agricultural land management, increased extreme weather events, and population pressure have escalated land degradation in all the APZs.
- Generally it is estimated that 4% - 12% of GNP is lost from environmental **degradation;** 85% of this from soil erosion and nutrient losses.
- However, the APZs experience varying levels of vulnerability to climate-related hazards (e.g. drought, floods, storms, pests and diseases) due to differences in biophysical, socio-economic and policy related factors.



Introduction



A map of Uganda showing the land degradation hotspots:

- Cattle Corridor – de-vegetation
- Lake Victoria Crescent – population pressure
- Highlands – soil erosion
- Eastern and Northern Uganda – light soils & low inherent soil fertility.

Challenges

- Soils are old [highly weathered] with little mineral nutrient reserves - rely on soil organic matter [SOM] for nutrients and good physical properties
- Decrease in fallow periods due to increased pressure on land
- Those under ‘fallow’ are in poor state [abandoned rather than deliberate fallow]
- Rain-fed agriculture
- Continuous cultivation without fertility enhancement
- Increased nutrient mining with low use of external inputs
- Limited use of land management practices

Thrusts of SLM

- **Enhancing land productivity** by supporting yield increases [water use efficiency, soil health]
- **Improving livelihoods** (household welfare) – food security and incomes
- **Improving ecosystem services** (provisioning services, regulating services, cultural services, supporting services)
- **Reducing risk exposure** from climate variability and change

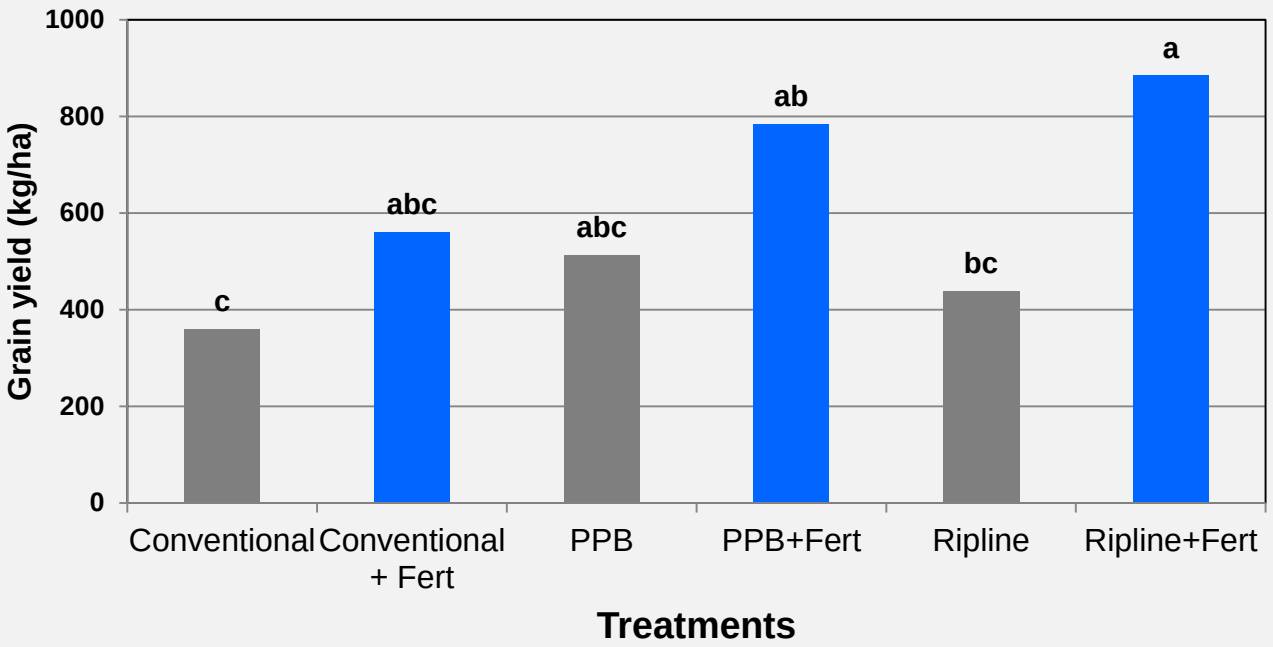
SLM benefits and success stories

In tillage trials/ demonstrations on degraded farmer plots (central Uganda), conservation farming tillage methods **[PPBs]** proved beneficial relative to conventional methods, with a short term benefit of increasing land productivity leading to better harvests and food security.

SLM benefits and success stories

In tillage trials/ demonstrations on degraded farmer plots (northern Uganda), conservation farming tillage methods **[Rip lines]** proved beneficial relative to conventional methods, with a short term benefit of increasing land productivity leading to better harvests and food security.

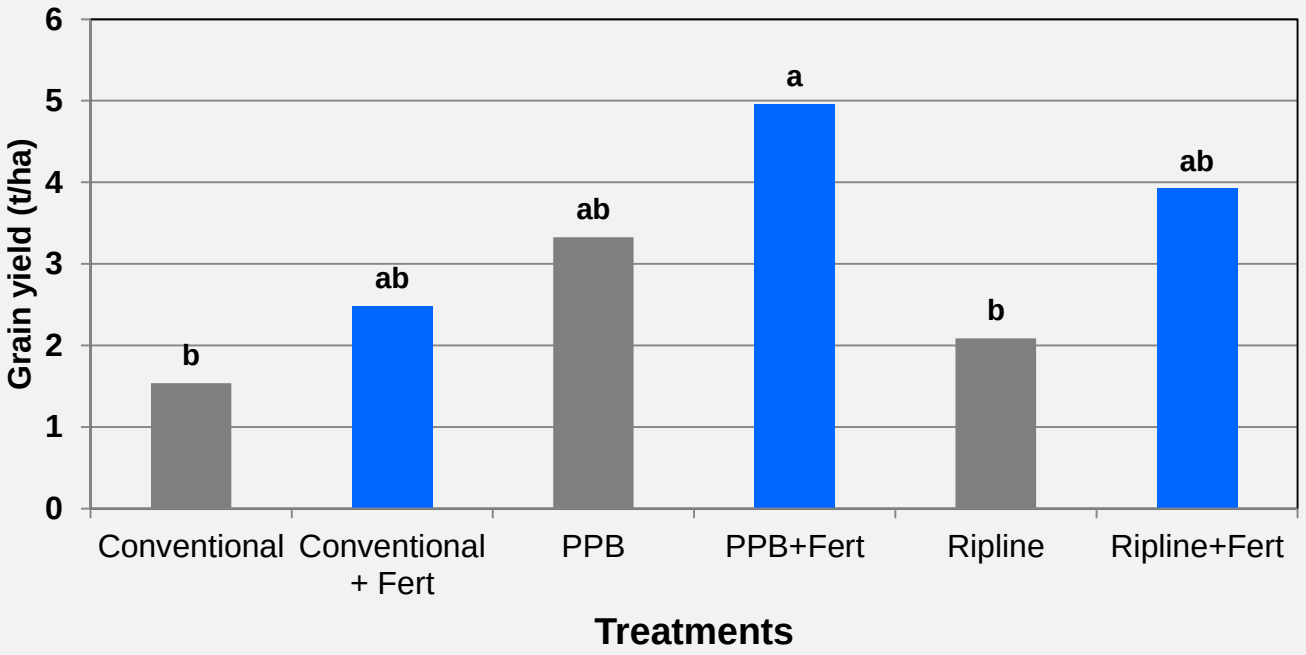
SLM benefits and success stories



Response of bean grain yield to different tillage practices with and without fertilizer - an average of 2 seasons

- Farmers using SLM technologies such as rip lines and permanent planting basins (PPB) in combination with improved seeds and fertilizers and/ or manure have seen their bean grain yields increase from as low as 300 kg ha^{-1} to 1,000 kg ha^{-1}, although the yield potential of beans in Uganda is 2,000 kg ha^{-1} **(Mubiru et al., 2017).**

SLM benefits and success stories



Response of maize grain yield to different tillage practices with and without fertilizer - an average of 2 seasons

- Maize grain yield has increased from an average of 3,000 kg ha^{-1} to 5,000 kg ha^{-1}; yield potential for hybrid maize ranges from 5,000 to 8,000 ha^{-1}. **(Mubiru et al., 2017)**

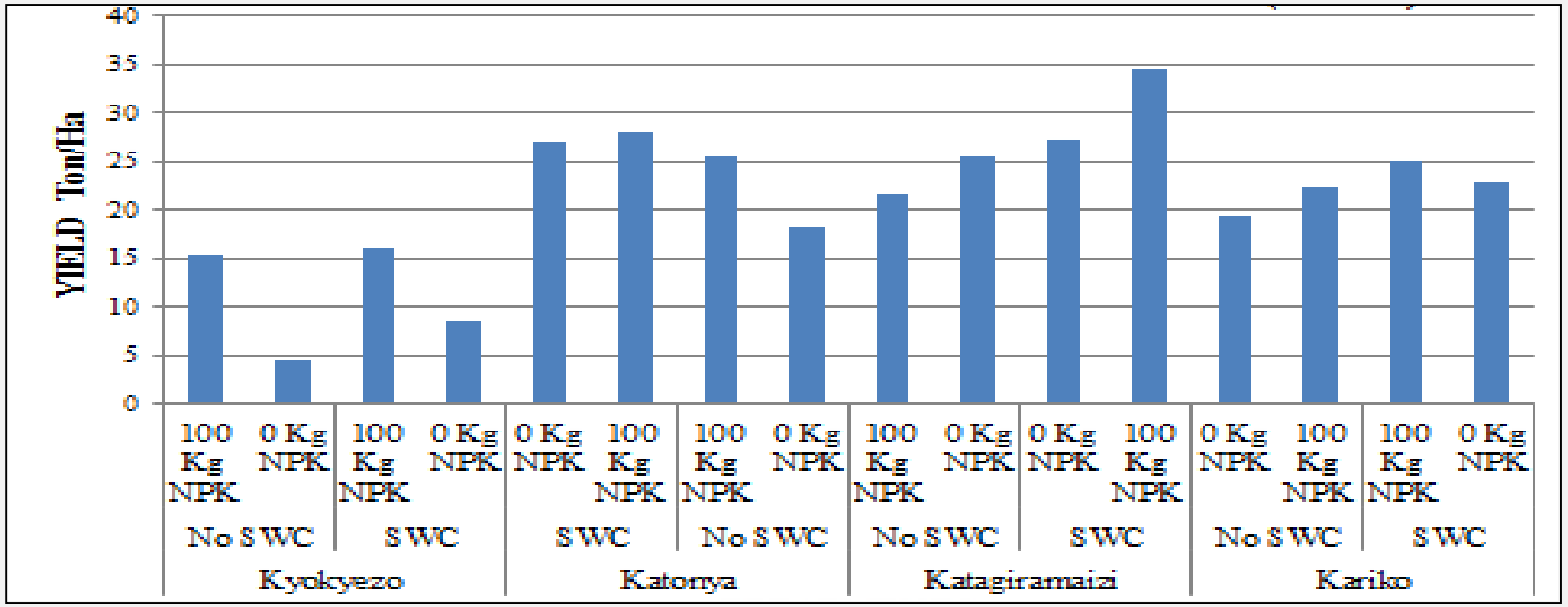
SLM benefits and success stories

Rangeland pasture rehabilitation demo site @ NEC Farm Katonga - Gomba

- 100 acres after SLM interventions were planted with Chloris Gayana, Centrosema and Calliandra fodder
- Pasture productivity increased from 0.5tons/ha to 75tons/ha per annum – fresh weight yield

SLM benefits and success stories

Yields of Irish potatoes under the effect of soil and water conservation (SWC) – Kabale District



Use of SLM interventions (SWC - contour bunds) increased Irish potato yields from 7 tons to 34 with the best combination being addition of fertilizer.

SLM benefits and success stories

Coffee rehabilitation (Kyanamukaka, Masaka District)

Mr. Lugajju's coffee yield increased from 20 bags/ha to 30bags/ha after integration of SLM interventions (water trenches, fertilizers, manures, agroforestry) [Average yield in Uganda is 16bags/ha; Brazil – 25bags/ha]

SLM benefits and success stories

Ms. Edith Nandutu (0778192435) Panyadoli Hills, Kiryandongo District

Maize yield increased from 250kg/ha to 3.75t/ha using SLM technologies (PPBs, contour bunds, fertilizer, mulching) in restored degraded land

Increased food and income security at household level

SLM benefits and success stories

Ms. Jovia Nakimuli (0772075765) Nyakahanga village, Ndeija sub county, Mbarara District

Trained on SLM, use of manure & put stonelines for SWC in bananas . Reported banana yield increases from average of 10-15 kg to 25-40 kg.

Challenges

- There is still a lot to be done, especially in regard to landscape rehabilitation and scaling up on-the ground activities
- Low uptake of innovations/ technologies
- Some communities where land is rented are not allowed to establish SLM technologies like contour bunds by the land lords
- Resistance of some farmers within the landscapes to participate in implementing SLM technologies

Lessons learnt

- Farmers that embraced SLM technologies are promoting them among other farmers
- Farmer to farmer learning visits are a good learning experience and a strong mobilization strategy
- Using an integrated landscape management approach has proved effective in showing visibility of SLM practices and encourages farmers to work together.
- Provision of tools/implements/ inputs catalyzes SLM implementation & improves group cohesiveness

Best practices

- PPBs and rip lines have increased land productivity
- SWC structures have helped rehabilitate degraded landscapes and increased land productivity
- Landscape approach is good for visibility & impact
- ToTs is cost effective and increases sustainability & scalability
- Demo plots – effective learning centre
- Exchange visits & Farmer Field Days – effective approach for adoption & scaling
- Regular M&E – instrumental in making sure that activities remain on track

Conclusions

- The SLM interventions have demonstrated the role of improved land and water management practices in increasing land productivity, incomes and livelihoods as well as resilience of farming systems to climate shocks
- Increased adoption of SLM interventions will contribute to realization of the country's national development goals [ASSP; NDP; Vision 2040] and realization of Uganda's SDGs targets

Thank you for your attention