POTENTIAL IMPACTS OF CONSERVATION AGRICULTURE IN THE LAKE VICTORIA BASIN

G. Bahiigwa[1], S.C. Massawe,[1] S. Kaitibie[1], A. Notenbaert[1], C.Ong[2], J.Sang[2]

[1]SAKSS-ECA Node - International Livestock Research Institute (ILRI)
[2] International Centre for Research in Agroforestry (ICRAF)

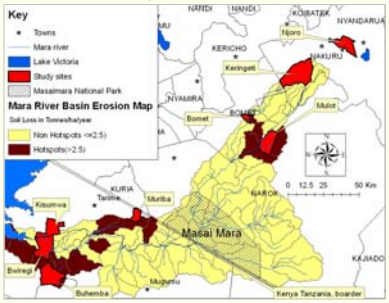
Study objectives

- To assess the potential of promoting Conservation Agriculture (CA) as a technology for mitigating the impacts of soil erosion in the Lake Victoria Basin (LVB)
- To assess the impact of CA on the welfare of farmers adopting the technology

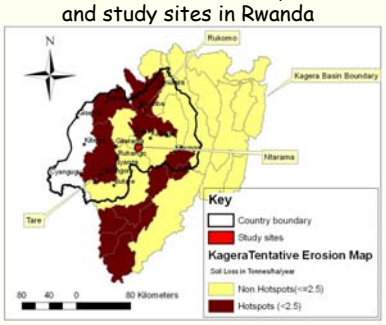
Methodology and Findings

- Spatial characterization of the Mara and Kagera basins, identifying the erosion hotspots and development domains
- Soil erosion hotspots are based on bio-physical modeling, and development domains are based on market access and agricultural potential
- Site selection for household surveys (see map below) in Mara and Kagera basins based on erosion hotspots and development domains
- CA, defined as a combined application of permanent crop cover, reduced tillage and crop rotation or crop combination, is not applied anywhere in the study sites. Hence, two villages Kerma and Ngecha, outside the Mara were selected for the study of CA adoption.

Erosion hotspots and study sites in the Mara river basin



Tentative erosion hotspots and study sites in Rwanda



Adoption of CA in Njoro division Nakuru district, Kenya

- CA is practiced by small scale farmers on maize with support from an FAO project since 2004
- Some large scale farmers practice CA on wheat
- In 2005, 23 percent and 40 percent of farmers adopted CA in Kerma and Ngecha villages, respectively
- CA adoption is still on experimental basis in both villages, adopters are only applying the technology on small portions of their land: 4 and 9 percent in Kerma and Ngecha, respectively.
- About 50% of the adopters apply all the three CA components

Results of CA application in Kerma and Ngecha villages

	Kerma	Ngecha
Farm size (acres)	4.3	6.0
Land allocated to maize (acres)	1.5	2.0
Share of land allocated to maize (%)	54	60
Share of maize land to CA (%)	15	22
Share of CA land in total farm size (%)	3.7	8.9
Maize yield on CA land (Mt/Ha)	3.9	4.9
Maize yield on non-CA land (Mt/Ha)	1.9	2.6
Gross margin (KSh/Ha): CA maize	53,065	80,282
Gross margin (KSh/ Ha): non-CA maize	14,141	26,281

Note that for all villages:
- Maize yields doubled on plots where CA was applied in both villages
- Gross margins were more than three times higher on CA than on non CA plots

Healthy CA maize crop (left) vs non CA maize crop (right)

Lablab used as a cover crop in maize

Maize stalks maintained as mulch after harvesting

Is there potential for applying CA in the LVB?

CA is likely to be applied by farmers if introduced in the basin because results from its application on maize are impressive. The technology can also be applied to other crops grown in the basin such as beans, sorghum, wheat, millet, peas and vegetables (cabbages, tomatoes etc).

What is needed to promote CA in the Basin?

- Mainstream CA in extension programs of ministries of agriculture and curricula of agricultural training institutions
- CA needs some initial public investments in education and demonstration
- Farmer groups are important for CA, especially collective learning
- Model farmers or CA champions are important

What will make it difficult for CA adoption?

- Initial investments quite high for poor small-holders
- Inadequate institutional support from governments in the region
- Donor mentality among CA adopters
- Competition between cover crop for soil vs fodder for livestock
- Land tenure issues: rented land vs CA adoption
- Changing farmers' perceptions, especially tilling, burning, etc

IMPACT

SCC-Vi Agroforestry a Swedish extension program in Eastern Africa is using information from this study to design CA promotion activities in the Mara basin in Tanzania and Kenya

This study was conducted in 2006 with financial support from Sida