

SESSION 1

SUSTAINABLE LAND MANAGEMENT & CLIMATE CHANGE RESILIENCE: CONSERVATION
AGRICULTURE EXPERIENCES FROM AFRICA

PRESENTED BY SAIDI MKOMWA, ACT KENYA (WWW.ACT-AFRICA.ORG)

Background

Between 70% and 85% of rainfall is lost to surface runoff, deep drainage and evaporation rather than being used by crops for productive transpiration in the semi-arid tropics of Africa. Therefore, even though total rainfall may be sufficient for optimal crop growth, available water levels may be considerably lower and limit crop productivity. Generally, people assume that drought is due to insufficient rainfall or irrigation water, but in reality research shows that for crops in tillage-based cropping systems the primary causes of drought in much of sub-Saharan Africa is poor land and soil management. Soil tillage breaks down soil structure and soil organic matter, reducing water infiltration (and thereby increasing run-off and erosion) and soil water-holding capacity causing “droughts” even when rainfall should be sufficient for healthy crop yields. Because of climate change, increased variability in rainfall amount and distribution coupled with a reduction in rainfall is expected throughout most of Africa, aggravating the inefficiencies in rainfall use noted above.

Conservation Agriculture (CA) is a systems approach to farming formulated locally based on the following three interlinked principles as defined by FAO (www.fao.org/ag/ca). The principles are: 1) Avoiding or minimising mechanical soil disturbance, 2) Enhancing and maintaining a permanent mulch cover with organic matter on the soil surface, and 3) Diversification of species. These three locally formulated practices should be implemented in combination with other good technologies and practices by the farmers to obtain full productivity, socio-economic and environmental benefits from CA. CA can reduce the risk of moisture stress by increasing water infiltration and storage, reducing compaction impediments to root growth and reducing soil evaporation. CA is now being adopted in more than 20 countries in Africa as a core production component of climate-smart agriculture (CSA). The current conservative estimate of cropland under CA systems in Africa is about 2.68 Mha, an increase of some 447% since 2008/09.

Example projects and finding

Smallholder hand-tool and animal-traction CA technologies have been promoted by ACT in Eastern, Southern, West and Central Africa in the past seventeen years through projects funded by BMZ, IFAD, NORAD, EU and AGRA. Their main outputs were:

- o Maize grain yield was not significantly influenced by CA treatments during Year 1, but were significantly different to the farmer tillage practice from year 2 onwards.

- o More than 68% yield increases (1.5 to 2.5 tons per ha), in marginal areas, without irrigation from second season onwards
- o Yields in Farmers' practice tillage plots decreasing with time. This is NOT "natural".
- o Yields in Farmers' tilled fields endured more severe yield reductions with drought (-55% vs -21% to -36%) than the CA plot.
- o Net benefits always higher for the CA plots compared to the Farmers' tillage plots.
- o Legumes liked by women and provided additional food, nutrition, soil fertility improvement and income.
- o CA is being used by adopted to enhance Land Aggradation and Restores Landscapes. See Thomas Loronyo (<https://www.youtube.com/watch?v=l0orM79a6oo>)

Africa - Regional trends

CA is now being adopted in more than 20 countries in Africa as a core production component of climate-smart agriculture. The current conservative estimate of cropland under CA systems in Africa is about 2.68 Mha, an increase of some 447% since 2008/09.

Challenges and emerging solutions

In spite of the Africa Unions' Malabo Declaration with the vision of having 25M rural households practicing CSA by 2015, CA/CSA remains largely on project mode and not mainstreamed in Government programmes. A funded implementation plan for the Malabo Declaration is overdue.

Support is needed now to unlock private sector investments into smallholder agriculture. Mechanised Entrepreneurial CA Service Provision business models hold the promise to pave the way to create employment for the youths while sending the hoe to the museum by 2025.