



Conservation Agriculture Centres of Excellence



Introduction

The African Conservation Tillage Network (ACT) is a Pan-African not-for-profit organization that has evolved into an open platform for stimulating and facilitating the sharing of information and knowledge on experiences and lessons in promoting Conservation Agriculture (CA). ACT brings together stakeholders in the public, private and civil sectors dedicated to improving agricultural productivity and resilience in Africa's farming systems through the sustainable use of production inputs, and of natural resources of land, water and biodiversity. ACT's thrust is to add value to local, national and international efforts to scale CA. It does this through strategic partnerships that identify, adapt, adopt and scale up CA practices.

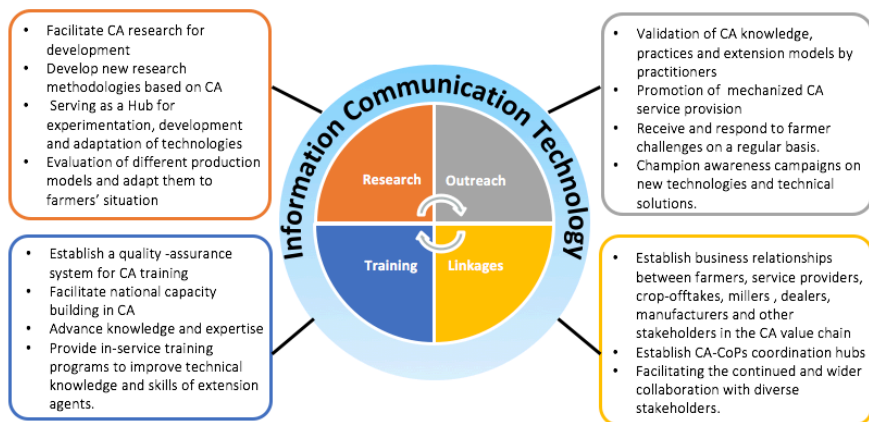
The ACT partnership strategy provides the basis of collaborating with various agricultural based organizations or institutions in different regions explicitly to promote Climate Smart Agriculture. No single actor, no matter how effective they are, can tackle today's agricultural productivity and environmental challenges alone. ACT strongly believes in growth of partnerships for enhancing its effectiveness in scaling up adaptation and adoption of CA and

natural resource management sectors. Effective networking between ACT and its partners continues to allow lesson learning that leads to impact, is beneficial and sustainable.

Its head office is in Nairobi, Kenya and it has sub-regional presence in Southern, Eastern, West & Central and Northern Africa. ACT works in partnership with national agricultural research institutions and academia across Africa, commonly identified as future Conservation Agriculture Centres of Excellence (CA CoE).

Partnership building is emphasized in the *ACT 2013–2022 strategic plan*, which identifies **Capacity Building and Partnership** as one of the six thematic areas. Strengthening institutional, individual and corporate private sector players and the farming communities' capacities in the uptake and use of CA is essential. One of the pillars identified to enhance this strategic focus is through partnering with CA CoE, where demonstrations, research, education and training on CA are being carried out. The CA CoEs have five key thrusts: Research, Outreach, Linkages, Information Technology And Training (Rolitt) (Figure 1).

Figure 1: CA CoE Five Key Thrusts



Information Communication Technology - supported on the ePlatform

The ePlatform is a virtual space where Conservation Agriculture knowledge is shared and turned into Action. It is meant to propel CA on a self-sustaining path, creating an all-inclusive and beneficial interaction among the key public and private sector stakeholders involved in the promotion of CA.

The platform allows Network members and other stakeholders to interact, network, share and exchange knowledge and information on CA. It also facilitates Entrepreneurial CA services provision through the e-commerce hub. ACT's organizational arrangement places CA CoEs as the focal institutions in different countries and regions. Figure 2 shows the coordination arrangement.



Enhanced M&E and impact documentation of CA at continental level

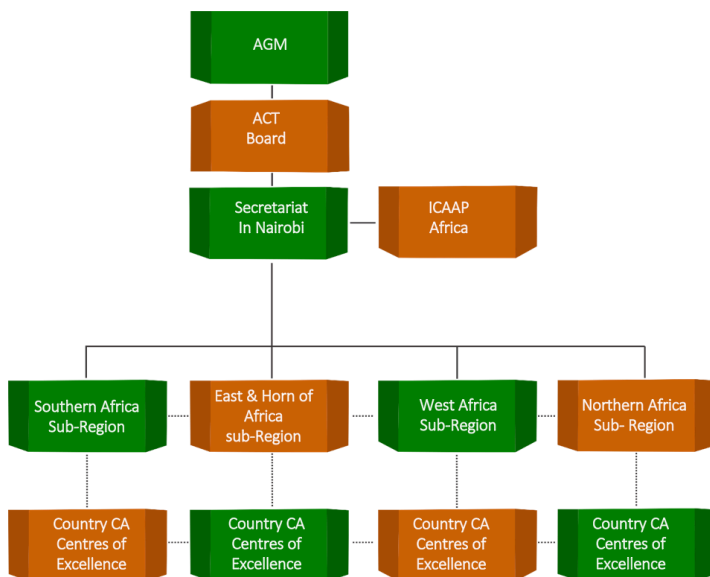


Facilitated CA knowledge management and information sharing



Supporting entrepreneurial mechanized CA service provision

Figure 2: ACT Strategic Organizational arrangement



Relevance of the CA Centres of Excellence

A centre of excellence is an organization that focuses on optimizing application or service characteristics such as quality, performance or availability. In today's world, a CoE applies to any organization committed to continuous creation, use and showcasing of its technological, service and business oriented capabilities to stakeholders in a competitive environment to acceptable international standards.

In 2012, ACT initiated recognition of CA CoE in various parts of Africa. CA CoE are public research and/or training institutions dedicated to the goals and showcasing the widespread adaptation and adoption of conservation agriculture at the national level. Some key areas of their contribution include:

I. Research

- Forefront CSA research in the region
- Creating new impact pathways and applications of the findings
- Develop and pilot new research methodologies based on CA
- Production of operation manuals and guidelines to support aspects of CA such as production, adaptation and mitigation

II. Outreach

- Co-generation, validation and dissemination of CA innovations and practices
- Promotion of mechanized CA service provision
- Sharing evidence-based knowledge and information across local, state and national contexts

III. Linkages

- Establish business relationships amongst CA stakeholders in targeted value chains
- Establish CA Communities of Practices (CA CoPs) coordination hubs
- Serving as a platform for public policy consultation

IV. Education and Training

- Formation and capacity building of CA CoE core team
- Facilitating capacity building on CA technologies for farmers, farmer groups, mechanized CA service providers, Agro-dealers, farmer organizations and NGOs.
- Developing training modules for all levels and training trainers and practitioners

V. Information Technology supported M & E and Knowledge Management

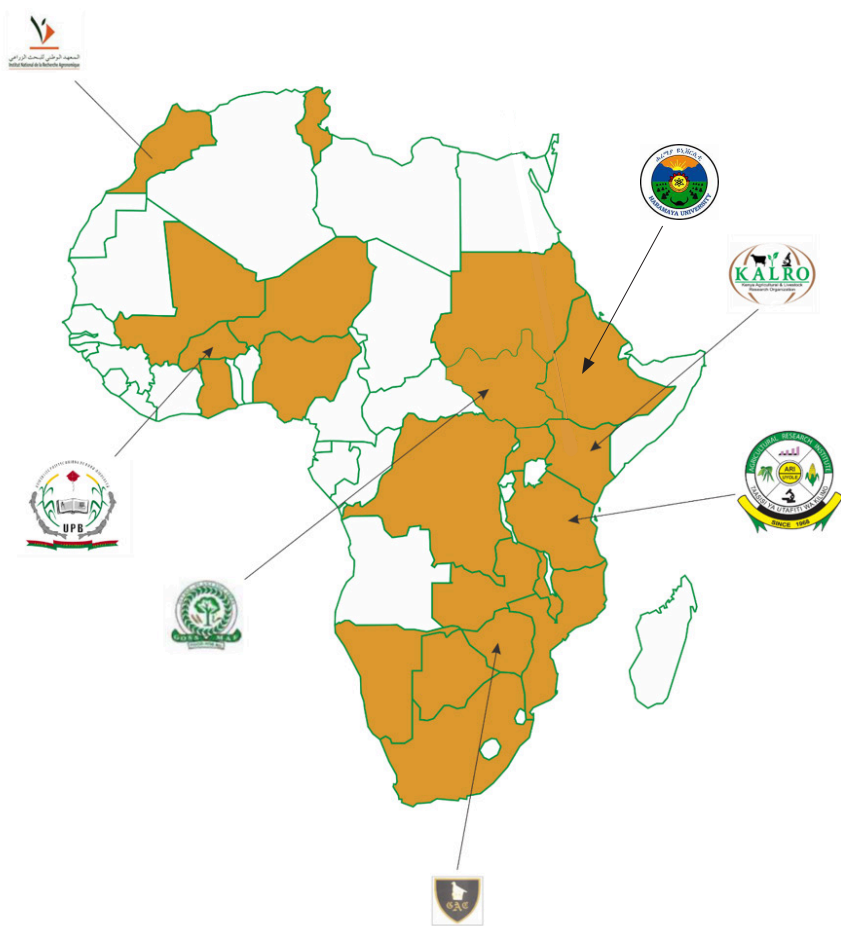
- Enhancing knowledge management and information sharing for effective CA adoption on the ground across vertical and horizontal scales
- Establishment of e-based knowledge sharing platforms across state, national and global contexts
- Identifying and documenting best practices and developing local resources for their implementation
- Supporting entrepreneurial mechanized CA service provision Enhanced M&E and impact documentation of CA at continental level.

ACT's CA CoE strategic growth vision

Through collaboration and strategic partnerships, ACT has a strategic vision to establish 25 CA CoEs in Africa by 2025 accomplished through a phased approach. Each Centre will be expected to have impact on the wider community through interaction with research and training institutes, governments, the private sector and non-profit sector. In the initial phase ACT has

initiated the establishment of six CoEs in different countries and regions in Africa. This approach will contribute to operationalization of "Vision 25 x 25" of the 1st Africa Congress on Conservation Agriculture (IACCA), Lusaka Declaration target of reaching 25 million farm households with CA systems and practices by 2025.

Establishment of CA CoE



Conservation Agriculture Centres of Excellence Established



CoE 1. AGRICULTURAL RESEARCH INSTITUTE-UYOLE, TANZANIA

The Agricultural Research Institute-Uyole (ARI-Uyole) is a public institution under the Ministry Agriculture, Food Security and Cooperatives, primarily to undertake agricultural research and development in the Southern Highlands of Tanzania. ARI-Uyole was founded in 1968 as public research institution. Its primary focus is on research and training for agricultural development. ACT has through a partnership process and collaborative activities on CA identified this institute as a Centre of Excellence. Backed by Sokoine University of Agriculture and the Ministry of Agriculture Training Institute Uyole, the institution will be a centre of excellence for training, carrying out research, monitoring, transferring skills and creating awareness of Conservation Agriculture to practitioners in Tanzania. The institution has begun building the capacity of staff and jointly supported model farmers since 2013. More information about the institution can be accessed at <http://www.ariuyole.go.tz/>



CoE 2. GWEBI AGRICULTURAL COLLEGE, ZIMBABWE

Gwebi Agricultural College is situated 27 km north-west of Harare, the capital of Zimbabwe. An affiliate of the University of Zimbabwe (UoZ), Gwebi College teaches, trains and advises farmers, farm workers and supervisors as well as extension and other agricultural workers in various aspects of agriculture, particularly conservation agriculture.

ACT has been working with Gwebi Agricultural College as a CA CoE to mitigate challenges faced in farming using Conservation Agriculture practices. Using the CA model farmer approach, farmers are empowered to address key challenges to low adoption of CA, which include limited knowledge and skills to implement CA, limited capacity of farmer organizations and service providers to implement CA, poor technical standards. More information about this college is available at <http://www.gwebiagric.ac.zw/>



CoE 3. KENYA AGRICULTURE AND LIVESTOCK RESEARCH ORGANIZATION NJORO, KENYA

The Kenya Agriculture and Livestock Research Organization (KALRO) Njoro is a centre under the Food Crops Research Institute, created under the Kenya Agricultural and Livestock Act of 2013. The institute's main focus is to generate, validate and release technologies on food crops. The institute focuses on cereals (maize, wheat, sorghum, millet, and rice), grain legumes (dry beans, pigeon pea, green gram, dolichos) and root and tuber crops (potato, sweet potatoes, cassava, yam and arrow root). KALRO Njoro is one of the seven centres of the institute mandated to conduct basic, strategic, applied and adaptive research using the value chain approach.

More information about KARLO Njoro can be accessed at http://www.kalro.org/food_crops_research_institute



CoE 4. L'INSTITUT NATIONAL DE LA RECHERCHE AGRONOMIQUE, IN MOROCCO

INRA, the national institute for agricultural research in Morocco, is mandated to undertake research for agricultural development. It is a public institution established in 1914, when the first official agricultural research services were created. INRA has recently reorganized to modernize its business processes. INRA operates through 10 regional agricultural research centres and 23 experimental stations distributed throughout the country to cover the different agricultural systems in Morocco. To accomplish its mission and to keep abreast of the latest scientific research INRA maintains partnerships with national and international organizations, development organizations, the private sector and non-governmental organizations.

Under Dr. R. Mrabet's leadership, INRA has an active research consortium on natural resource management established in 2009. The consortium includes the following institutions: IAV Hassan II University for Agronomy, Veterinary Institute, Rabat; ENA Meknes – National School for Agriculture; ENFI Sate – National School for Forest and Engineering. This consortium will manage the CA CoE with other participating institutions. The roadmap for establishing INRA as North Africa's Conservation Agriculture CoE has commenced, and Dr. Mrabet has been identified as the focal person. More information about the institution can be accessed at: <http://www.inra.org.ma/>



CoE 5. UNIVERSITÉ POLYTECHNIQUE DE BOBO-DIOULASSO IN BURKINA FASO

Université Polytechnique de Bobo-Dioulasso is a public university located in the village of Nasso, about 15 km from Bobo-Dioulasso, in the region Hauts-basins of Burkina Faso. It has five institutes and three research centres.

In West Africa, ACT has undertaken CA activities with the University of Bobo Dioulasso to implement project-based research through the IFAD-financed Smallholder Conservation Agriculture Promotion (SCAP) project and the EU-supported Agro-ecology based aggradation-conservation Agriculture (ABACO) project resulting in research carried out on CA. This partnership is being strengthened to make Bobo Dioulasso University a fully-fledged CA CoE, where customised training in CA will be offered to students, researchers, extension workers and other CA stakeholders. More information about the university is available at <http://www.univ-bobo.bf>

CoE 6. YEI CROP TRAINING CENTRE IN SOUTH SUDAN

Crop Training Centre is next to Tangore and is located in Central Equatorial State, South Sudan.

ACT has been working with Yei crop training centre primarily in carrying out national and international CA trainings and in building its capacity to become the CA CoE for South Sudan. More information about this centre is available.



CoE 7. HARAMAYA UNIVERSITY (HU)

Haramaya University (HU) was established on 15th May 1952 as Jimma Agricultural and Technical School and the Imperial College of Agricultural and Mechanical Arts (IECAMA) and renamed Haramaya University in February 2006. The aims of HU are: (1) be one of the leading African Universities with international reputation by 2025; (2) produce competent graduates in diverse fields of study, undertake rigorous, problem solving and cutting edge research, disseminate knowledge and technologies, and provide demand-driven and transformative community services; (3) evolve as an autonomous and independent (academic and research institution) graduate and research university with a competitive national and international quality and relevance standards in its academic, research and community services endeavours.

ACT has identified Haramaya University (HU) in Ethiopia as a Conservation Agriculture Centre of Excellence in Ethiopia. As a Centre of Excellence, Haramaya University will reenergize focus on conservation agriculture training, research, outreach and linkages. The University also hosts the Africa Center of Excellence For Climate Smart agriculture and Biodiversity conservation. More information about the institution can be accessed at <http://www.haramaya.edu.et/>



CA CoE Impact Vision

The expected impact of the CA CoE model is to deliver co-ordinated demand-driven CA based agricultural technologies, information services and knowledge to farmers and other stakeholders, for increased agricultural productivity, profitability, competitiveness and sustainable use of natural resources. This is envisioned to develop infrastructure of services and human resources which will trigger an exponential increase in the number of entrepreneurs providing sustainable mechanized CA services to farmers and other actors along relevant value chains. This should in turn lead to making CA an agribusiness as it relates to farmer practices and to farmers as users of CA, as well as to service providers as suppliers of services. The infrastructure of services and human resources include support for research and development, development of standard curricula for the training of farmers and

key actors along the value chain, mainstreaming CA in agricultural training institutions, capacity building of existing and potential CA machine and equipment service providers, establishing strategic linkages with key support services that include financial, insurance and manufacturing institutions, and the engagement of young people through schools to inculcate CA thinking and practices for posterity. At the heart of the strategic framework is a capacity building model for extension workers and service providers to establish themselves as commercially viable entities providing CA services along the value chain.

At a higher regional level, the model forms a co-ordinated network for policy engagement, training/capacity building, agribusiness development, end-to-end linkages to output and input markets.

Specific outputs of the CA CoEs include:

- Awareness to CA increased
- Knowledge and skills on CA among value chain actors increased
- CA Stakeholders' capacities increased
- Availability and accessibility of CA agro-inputs and implements increased
- Research & Development (R & D) on CA enhanced
- Policy environment and frameworks for up scaling CA improved
- CA Program Management enhanced
- Regulatory framework to ensure that all value chain operators benefit and make profit out of their business

The CA CoE model for supporting integrated CA systems development across Africa is poised to leverage contribution of national and international intellectuals and academia as well as development stakeholders to strategically participate and contribute towards solving smallholder farmers' challenges in Africa.

CA CoE Contacts



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The **3** Principles of Conservation Agriculture



1

Minimum Soil disturbance

It involves reduced tillage or direct planting into the soil, without hoeing or ploughing. It involves growing crops with minimum mechanical seedbed preparation.

Benefits

- Traps soil moisture to improve water availability
- Reduces soil erosion
- Reduces labor, saves time
- Saves fuel
- Increases organic matter
- Improves water quality



2

Permanent soil cover

This is important to protect the soil against the deleterious effects of exposure to rain and sun; to provide the micro and macro organisms in the soil with a constant supply of "food"; and alter the microclimate in the soil for optimal growth and development of soil organisms, including plant roots.

Benefits

- Protect soil from erosion by wind and water
- Suppresses weed germination and growth
- Improve organic matter accumulation and carbon sequestration
- Improves recycling of nutrients



3

Crop rotation/Associations

Crop rotation/ Association mean that different crops are alternated and/or intercropped in the same field. Plants are often grouped by families that share similar growth habits and requirements. By knowing your plant families; you can create a rotational plan for your farm. Above is an example of a rotational plan. Crops can be rotated either between fields or rows.

Benefits

- Controls pests and diseases
- It helps utilize soil nutrients more efficiently
- Reduce weed infestation
- Improvement of water use: Crops with different rooting system utilize water at different soil depths



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