AFRICAN CONSERVATION TILLAGE NETWORK
Partnering for Economic Growth, Improved Food Security and a Better Environment

Updates & News Alert

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ALSO IN THIS ISSUE

1 Editor's view: Introducing January - February 2022 CA Alert
2 Joint Actions on Operationalization of the Framework for Sustainable Agricultural Mechanization in Africa (F-SAMA)
3 CEMA calls on institutions to mainstream agricultural mechanization in upcoming EU-Africa Summit
4 300 000 Farmers Adopt Conservation Agriculture in Zimbabwe
4 Zimbabwe: Conservation Farming Future of Agriculture
5 Conservation Agriculture systems boosts bird numbers 'by 1000%
5 Adopt Conservation Agriculture
6 Smart subsidies for sustainable soils: Evidence from a randomized controlled
6 Events and Opportunities

Editor's view: Introducing the January – February 2022 CA Alert

africa|mechanize

ALL ABOUT SUSTAINABLE AGRICULTURAL MECHANIZATION IN AFRICA

African Union | Food and Agriculture Organization of the United Nations | Joint Actions on Operationalization of the Framework for Sustainable Agricultural Mechanization in Africa (F-SAMA)

VIRTUAL WEBINAR No. 9 | Thursday 31 March, 2022 | 9:00hrs -12:00hrs GMT

Establishment of Operational Structures for Implementation of the F-SAMA at Sub-Regional and Regional Levels

The African Union unveiling the "Retiring the Hoe to the Museum" statue in Bobo Dioulasso, Burkina Faso, October 2019.

It is globally acknowledged that the current tillage-based agriculture, forest and land use practices in Africa are unsustainable and have a toll on the environment, contributing 15% of the Global greenhouse gas emissions and contribute to climate change. Besides, there is continental consensus that to achieve the African Union Malabo Declaration, agricultural transformation is imperative. The *business as usual* farming practices that has been the norm for the last four decades defined by low productivity, high labour and drudgery demands, feminization of agriculture and associated natural resource degradation cannot continue if we have to achieve this continental goal. We cannot expect different results by doing things the same way.

The good news is that across Africa, governments, development practitioners and private companies have re-discovered Conservation Agriculture (CA) and Sustainable Agricultural Mechanization (SAM) practices and technologies as top priorities in the menu of the envisaged agricultural transformation. Today, the debate on development of sustainable agricultural mechanization turns into the debate on improving agricultural techniques as well as helping them improve the sustainability of the entire agricultural system. Many Africa countries have initiated different interventions and innovations geared towards enhancing agricultural production, productivity and profitability of the sector. The emphasis is to commercially, environmentally and sustainably increase food and fibre production to meet the ever-increasing demand without degrading the natural resources.

The unconventional and sometimes paradigm shifting demands of adapting/adopting Conservation Agriculture to make climate smart agriculture real in Africa priorities the need for capacity development at all levels. It is in this context that the ACT Network, *with the vision of* ***promoting sustainable agriculture (SA)*** *anchored on the three niche pillars of Conservation Agriculture (CA), Sustainable Agricultural Mechanization (SAM) and Ecosystem Management (EM)*, are now working on systemic, organizational, individual and cross-cutting capacity development facets based on these pillars. Multi-stakeholder partnerships are being developed with the multitude of ACT members, friends and sustainable agriculture stakeholders, for them to easily identify opportunities, roles and easy-to-plug-in activities from wherever they are as their contribution towards sustainable agriculture in Africa. Furthermore, deliberate efforts are being made to focus on developing enabling environments, building performing and capable African institutions, and the capacity and competency of individuals to function efficiently and effectively.

The recent global outbreak of COVID-19 pandemic which occasioned different containment measures including social distancing, demanding fewer people to achieve production tasks efficiently and timely, enhanced the significance of CA and SAM practices. Therefore, mainstreaming sustainable agriculture systems in Africa is greatly necessary if sustainable and economically viable agriculture is to be achieved. Farmers and agriculture stakeholders need to intensify production and coordinate

their efforts to ensure timely support to production. There is sufficient evidence that CA offers options that over time increase the productivity of smallholder production systems sustainably as well as their profitability and resilience without compromising the environment. To achieve greater impact, CA must be tailored to the agro-ecological and socio-economic contexts of smallholder farmers.

It is against this background that the African Conservation Tillage Network (ACT) continues to promote and advocate for agricultural transformation and intensification in Africa through adoption of Conservation Agriculture, Sustainable Agricultural Mechanization and other climate smart agriculture (CSA) systems. Most of ACT's programmes and projects are thematically geared towards enhancing economic growth, creation of jobs along the entire agricultural and food systems value chain as well as supporting climate change resilience. Some of the strategic actions taken include among others supporting operationalization of the Sustainable Agricultural Mechanization: a framework for Africa (SAMA).

ACT acknowledges the various sources, authors, reporters, organizations and practitioners whose articles appear in this January -February 2022 issue. It is testimony of the enthusiasm and interest from various organizations, countries, researchers and scientists in Africa's agricultural development. We encourage you to share your Conservation Agriculture and Sustainable agriculture mechanization views and articles capturing the status and extent of adaptation and adoption of Conservation Agriculture and Sustainable Agricultural Mechanization in any Country in Africa or beyond for sharing with others. Please submit articles, links or views to kim@act-africa.org. Use the *#conservationagriculture, #africamechanize* to share links on articles, journals, news on CA and tag us on twitter *@ACTillage.*

Apologies for any cross posting of some articles.

Joint Actions on Operationalization of the Framework for Sustainable Agricultural Mechanization in Africa (F-SAMA)

Establishment of Operational Structures for Implementation of the F-SAMA at Sub-Regional and Regional Levels

Sustainable Agricultural Mechanization (SAM) in Africa is an urgent imperative and an indispensable pillar for attaining the *Malabo Declaration: Zero Hunger Vision by 2025*, Goal 2 of the *Sustainable Development Goals* – and *Agenda 2063,* the *Prosperous Africa We Want.* Doubling agricultural productivity and eliminating hunger and malnutrition in Africa by 2025 will not be realized unless mechanization along the food value chain is accorded utmost priority. Moreover, the COVID-19 pandemic has brought to the fore the important role mechanization can play in ensuring continuity of farm operations even during uncommon situations that the world is currently witnessing.

Understanding this situation, the African Union Commission (AUC) and the Food and Agriculture Organization of the United Nations (FAO), through an Africa- wide consultative process, developed the Framework for Sustainable Agricultural Mechanization in Africa (F-SAMA) in response to the request of the African Union Specialized Technical Committee (STC) on Agriculture, Rural Development, Water and Environment. The F-SAMA, which was subsequently launched in Rome on 5th October 2018 during the 26th Session of the Committee on Agriculture (COAG), has ten priority elements geared towards informing policy and decision-makers in the Member States, the Regional Economic Communities (RECs) in Africa, and the wider development community dealing with agricultural development on the significance of mainstreaming SAM in their overall national and regional agricultural development programmes.

The AfricaMechanize platform, www.africamechanize.org, designed in the context of being an Africa-wide sustainable agricultural mechanization platform, has been developed by the African Conservation Tillage Network (ACT) as an ICT-level knowledge platform for SAM technology exchange at a pan-African level, following recommendations of the December 2016 stakeholders' consultative meeting co-organised by FAO, World Bank, AGRA, ACT and others in Nairobi Kenya. The need for an information platform for SAM in Africa is further reinforced in Element 10 of the F-SAMA as one key option of *sustainable institutions for regional cooperation and networking*. From November 2020 to December 2021, eight webinars/virtual discussions were conducted with Heads of Agricultural Mechanization and Engineering Services [HAMES] and other stakeholders of SAM in Africa on the ten priority elements of F-SAMA and operationalizing the framework in Africa. The webinars attracted more than 1,500 participants and 60 speakers from over 75 countries globally (45 from Africa). The virtual discussions were conducted through the AfricaMechanize information platform and jointly organized by FAO, AUC, ACT and other key mechanization stakeholders in Africa.

Building on the successful exchanges and lessons learnt through the webinars, *a resolution* was passed, at Webinar number 8 held on 2nd December 2021, to organise the first virtual meeting of HAMES across Africa, to establish operational structures for supporting the joint implementation of F-SAMA programmes and projects at sub regional and regional levels noting that: (i) The agricultural mechanization units in Africa are at different levels of development [Departmental, Divisional or Section level]; and (ii) They are led by officers with different designations, amongst others, Directors, Assistant Directors, Heads, Commissioners or Chief Engineers which are collectively referred to as HAMES herein. The Objective of Webinar 9 is to actualize this resolution. It will convene the *first virtual meeting* [FVM] of HAMES to initiate actions towards operationalization of two overarching elements of F-SAMA, namely:

a) Element 9: Need for a Long-term Vision; Policy and Strategy Issues

b) Element 10: Creating Sustainable Institutions for Regional Collaboration and Networking

The Webinar will be held online from 09.00 to 12.00 hrs GMT on Thursday 31st March 2022, using the Zoom communication tool, in both English and French.

Read more: F-SAMA Webinars Announcement

CEMA calls on institutions to mainstream agricultural mechanization in upcoming EU-Africa Summit

European Manufacturers of Agricultural Machinery, reunited in the CEMA Board of Directors, called on EU leaders to mainstream Sustainable Agricultural Mechanization in Africa, as part of the discussions in the 6th EU Union – African Union Summit. The summit formed the basis to launch a renewed AU-EU partnership.

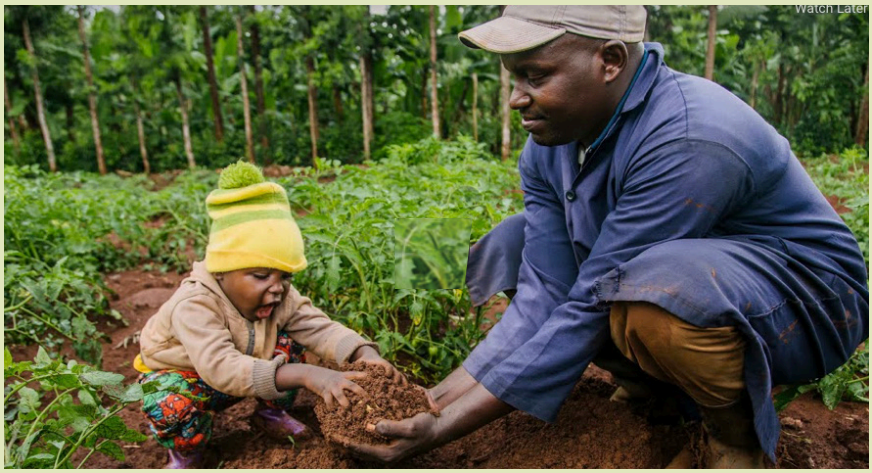
Agriculture and sustainable development will be crucial topics of debate during the two-days high level event. In this framework, CEMA underlines the role that mechanization can and should play to ensure food security and to boost the sustainability of agricultural practices.

CEMA calls on leaders to promote tailored, inclusive, and integrated approaches to agricultural mechanization, which have the ability to make a significant difference in increasing the welfare of farm households and create positive dynamics and opportunities for economic growth in rural areas. Sustainable mechanization, applying different forms of skills, power sources (from manual to engine) and equipment along the agri-food value chain, can meet the specific needs of local farming communities, improving productivity and competitiveness as highlighted in CEMA's Position Paper "Promoting Sustainable Agricultural Mechanization in Africa".

Since 2015 CEMA has an ongoing partnership with FAO, to manage and disseminate knowledge on sustainable approaches to agricultural mechanization, as well as jointly develop technical programmes to support innovation in mechanization and facilitate the implementation of sustainable mechanization initiatives at the field level.

On the basis of the 10 SAMA elements developed by the FAO, **CEMA recommends a dual approach** to mainstream sustainable agriculture mechanization in Africa, **involving both top-down and bottom-up actions under the prerequisite of a robust governance system**. Read More

Achieving Food Security in Africa with Healthier Soil



Douglas Mungai—Learning how to improve soil health

Although often overlooked, healthy soil is an important part of conservation. In fact, soil hosts more than 25 percent of our planet's biodiversity and counteracts climate change by sequestering carbon. While seemingly homogenous, soil itself is an ecosystem—it comprises complex communities of organisms working together to maintain its health. When properly managed, it will provide nutrients for plant growth, absorb and hold rainwater, filter and buffer potential pollutants, and serve as the basis for productive agriculture, all while providing a habitat for animals, insects, invertebrates, bacteria, and fungi. In essence, soil health is a fundamental building block not only for successful agriculture but for any healthy ecosystem.

Soil health is a fundamental building block not only for successful agriculture but for any healthy ecosystem.

Conventional agriculture can often employ unsustainable soil management practices, such as the overuse of chemicals and the reduction of organic matter inputs, intensive tilling, removing vegetation cover, and mono-cropping. Over time, these practices can create a vicious cycle that degrades soil quality, reduces productivity, and releases carbon emissions into the atmosphere.

Regenerative practices, however, have the potential to allow producers to work with the land—not against it—to improve soil health and the resilience of food systems. When done correctly, regenerative agriculture practices can aid in carbon sequestration, improve the soil's essential nitrogen and phosphorus content, and increase soil moisture. Many of these practices, such as improving soil surface coverage, using low-cost technology to test soil, and diversifying crops, are knowledge intensive and require training. Behavior change amongst smallholder farmers can be, understandably, slow to take hold. Securing farmers' buy-in only happens through concrete evidence that demonstrate the economic benefits. However, once there are positive results, most farmers are eager to adapt their production. Read More

300 000 Farmers Adopt Conservation Agriculture in Zimbabwe

Over 300 000 farmers in Zimbabwe have adopted conservation farming and through this method, thereby nearly tripling their crop production and improving household incomes, the Food and Agriculture Organization (FAO), announced in its latest update on Zimbabwe.

According to the FAO, when Conservation Agriculture was introduced to Zimbabwe, rural areas became dotted with what observers called "NGO plots" – parcels of land where farmers practiced the new approach. However, these small plots were surrounded by other fields where farmers defied the concept and continued with their conventional farming methods.

"Initially, FAO and other development groups supplied farmers with enough seed and fertilizer to plant half a hectare under Conservation Agriculture – enough to get them started. However, the fact that they did not expand these plots made it obvious that, while farmers welcomed the inputs, they were not convinced enough to convert all of their land," FAO said in its report.

"There were reasons for their initial scepticism. Conservation Agriculture is built on three principles – minimum soil disturbance, permanent soil cover and crop rotation – that are known to reduce erosion, improve soil quality, conserve water, reduce fuel costs and, above all, improve yields. However, from the smallholder's point of view, each principle had its own problems."

FAO said it was forced to change its strategy, and narrowed its focus to a small core group of farmers who were seriously convinced of the benefits. It also established demonstration fields where farmers could observe the increased yields of Conservation Agriculture compared with other farming techniques. Learn More

Zimbabwe: Conservation Farming Future of Agriculture

Women are the heart of most farming activities in the Zimbabwe, they do most of the work. Having seen the erratic weather patterns and the reduction in yields caused by climate change, a few women from Zhombe district have opted out of using conventional farming methods. They have embraced Conservation Agriculture, some having been practicing it for over 10 years now. Conservation Agriculture or farming is a concept for resource-saving agricultural crop production that conserves the environment. Farmers use different measures like no tilling, no fertilizers or pesticides, but use organic means which do not damage the environment. The country has been experiencing frequent and severe droughts, storms, high temperatures and overall conditions unfavourable for living and farming.

Zimbabwe is predominantly dependent on farming for its food supply needs, therefore agriculture remains the answer to the country's problems. The Government has been encouraging conservation farming, giving inputs like seeds, technical support, fertilisers to those who are taking part in the government led "Pfumvudza" project. The Pfumvudza project is a government-led input programme, a conservation farming technique meant to drive Zimbabwe towards food sustenance.

Chick pea cover crop after the main crop harvest

This, in an effort to meet the United Nations' (UN) Sustainable Development Goals (SDGs), SDG 2 on ending hunger, achieving food security and improving nutrition. Read More

Conservation Agriculture systems boosts bird numbers 'by 1000%

Numbers of farmland birds on fields established by direct drill or min till can be 1000% higher than conventionally established areas over winter, according to research.

The independently monitored research follow over three years of monitoring on two farms, undertaken by the Sustainable Farming Initiative (SFI) and Syngenta Conservation Agriculture. The research is studying the field-scale agronomic, economic and environmental implications of Conservation Agriculture establishment techniques on contrasting light land, at East Lenham in Kent, and the heavy soils of Loddington in Leicestershire.

On the Game & Wildlife Conservation Trust (GWCT) Allerton Project farm, at Loddington, areas established with these techniques recorded an average 1011% more birds over the winter, compared to crops established with conventional plough-based tillage.

At East Lenham in Kent, the average numbers of birds recorded on the ground over the past three winters was 145% higher in fields established by direct drill/light till.

Birds were monitored once a month on the different establishment system throughout the winter, with transects walked across each area to count birds on the ground. Numbers recorded were the annual average seen on each system.

Results of detailed monitoring over the years of the ongoing project has confirmed the trend towards improved soil health and biodiversity with Conservation Agriculture techniques, reported Syngenta sustainable farming manager, Belinda Bailey. Learn More

Adopt Conservation Agriculture

OVER 42,000 households in Kalomo, Zambia have been encouraged to adopt Conservation Agriculture through the US$800,000 Early Drought Project (EDR) being implemented by the Adventist Development and Relief Agency (ADRA). EDR is assisting farmers that were highly affected by the 2018/2019 drought, which hit most parts of Zambia. Kalomo was severely affected, which led to reduced crop production, resulting in acute food insecurity in the district.

The two-year project is funded by the World Food Programme (WFP) and is being implemented in partnership with the Ministry of Agriculture. ADRA country director Kennedy Habasimbi said in an interview recently that the agency is helping smallholder farmers recover from the drought by supporting them with nutritious school meals for children, among others. Mr Habasimbi said the project stimulated the adoption of Conservation Agriculture by incentivizing targeted households using sustainable production systems to improve productivity and ultimately contribute to financial sustainability. "Farmers received emergency input packs, comprised of drought-tolerant seeds such as cowpeas, sorghum and cassava, and equipment such as 5, 996 ripper attachments," he said.

It is expected that after adopting conservation farming, farmers will not grow crops for home consumption but to earn extra income. Mr Habasimbi said the project activities include exposing smallholder farmers to climate-smart agriculture, crop diversification and post-harvest management, among others. While the main project activities are use of Conservation Agriculture, provision of agricultural input support and promotion of post-harvest handling and storage techniques are also being taught. One of the beneficiaries, Tenson Munkombwe of Simakakata village in Kalomo, is optimistic the project interventions Read More

ADRA's four-year program analysis confirms sorghum helps farmers and communities in Madagascar survive severe drought . Photo credit: Randriamiarintsoa Herimanjato Richard

Smart subsidies for sustainable soils: Evidence from a randomized controlled trial in southern Malawi

Conventional agricultural practices – especially conventional tillage – are a major driver of soil erosion globally. While soil may not frequently consider a vulnerable natural resource, the erosion and degradation of soils poses a serious threat to food production and the production of numerous other *in situ* and *ex situ* ecosystem services. This study provides some of the first evidence on the effectiveness of a payments for ecosystem services (PES) program to encourage the adoption of soil conservation practices, specifically Conservation Agriculture (CA).

Through minimized soil disturbance, permanent soil cover, and diversified crop mix, CA is believed to enhance soil fertility and rehabilitate soil structure, with the resulting preservation of ecosystem service flows. By providing calibrated financial incentives, we demonstrate that it is possible to substantially increase the extent and intensity of CA adoption. What is more, we show that a novel incentive mechanism that leverages social networks for the consolidation of fragmented land may be more effective at bringing more land under conservation objectives, even if some of the additional land does not officially fall under the purview of the PES program. We also demonstrate that some of the supposed weaknesses hindering the adoption of CA – lower yields in the short-run and higher expenditures on weed control – were not necessarily obstacles in our study area, perhaps suggesting that the provision of subsidies need not continue into perpetuity, but may only be needed to overcome short-term transition costs. Learn More

Different declarations on Conservation Agriculture and SAM made in different regions: Get updated and evaluate

- The **2018** Sustainable Agricultural Mechanization: A Framework for Africa, https://www.act-africa.org/lib.php?com=5&com2=20&com3=122&res_id=306
- The **2014** African Union Malabo Declaration: Vision 25x25, https://bit.ly/3qqYeZ1
- Report of the 1st World Congress on Conservation Agriculture. Available online: www.act-africa.org/file/newsletters/books_manuals/first-wcca%20.pdf
- The **2014** Declaration of the First Africa Congress on Conservation Agriculture (http://www.africacacongress.org/system/ files_force/uploaded-files/declaration-of-the-first-africa-congress-on-conservation-agriculture-2014.pdf?download=1),

& The **2009** New Delhi Declaration on Conservation Agriculture (http://www.fao.org/ag/ca/doc/NewDelhiDeclarationCA.pdf),

Events and Opportunities

Webinar 9 Announcement: Operationalization of Sustainable Agricultural Mechanization Framework for Africa (F-SAMA)

To sustain the momentum of the continental information exchange through the Webinars initiated in 2020 through 2021 (as contained in the https://www.africamechanize.org/webinar-portal/), the next Webinar under the Africa Mechanize platform for the start of 2022 webinar 9 is organized around the 9 & 10 elements of F-SAMA. These webinars and discussion forums are being organized by the African Union (https://au.int/), Food and Agriculture Organization of the United Nations (FAO) (www.fao.org) and African Conservation Tillage Network (ACT) (www.act-africa.org).

For more information schedule webinars and registration, visit the site https://www.africamechanize.org/

Survey for mechanization status in Africa

The University of Illinois and Kansas State Universities of the United States are undertaking an online survey on the mechanization status in Africa. The FAO Sustainable Agricultural Mechanization (SAM) team and the AfricaMechanize platform, www.africamechanize.org, are supporting this initiative as it aligns to operationalization of the Framework for Sustainable Agricultural Mechanization for Africa, F-SAMA.

You are encouraged to participate in this survey if you are based in a country of sub-Saharan Africa or if you have agricultural mechanization experience in one of the African countries. Your contribution is important to contribute to establishment of an action plan for key stakeholders, the donor community, and policy makers. Please complete this survey before March 30, 2022, using the following link:

https://kstate.qualtrics.com/jfe/form/SV_bkGzRBmat6JPE34

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Norad

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