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

Updates & News Alert

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IN THIS ISSUE

2 Joint Efforts on Operationalization of the Framework for Sustainable Agricultural Mechanization in Africa: Third Webinar: The Increasing production and productivity in agriculture by accelerating adoption of mechanization: A case of Nigeria and Cameroon.
3 Africa-Mechanize Knowledge Platform
3 No-till farming makes soil more resilient to climate change – Expert
3 Soil health: farming with nature, guided by science
4 Soil health is food wealth
4 Earth Day 2021: Restoring agriculture to transform food systems
5 Pioneering Conservation Agriculture in Uganda with zero tillage & multi-crop rotation.
5 Conservation Agriculture improves adaptive capacity of cropping systems to climate stress in Malawi.
6 Long-term Conservation Agriculture improves water properties and crop productivity in a Lixisol
6 Video: Scaling up Conservation Agriculture in Mozambique
6 Basic principles of Conservation Agriculture – ARC
7 Events and Opportunities

Editor's view: Introducing the March - April 2021 CA & SAM Alert

Photo Credit: FAO

The demand from agriculture by the African community is to increase the quantity and quality of food while creating rural employment, taking care of the environment, using less fossil fuel and purchased inputs, promoting biodiversity, efficiency, resilience, and climate change adaptation and mitigation. This has triggered the need to radically transform the sector to meet this growing demand. Many initiatives and frameworks have been put in place in the continent with the view to rally African countries towards agricultural development and growth. The guiding principle is collective vision to achieve zero hunger by 2025 and prosperity as envisioned by the African Union Agenda 2063. At different countries, prioritized interventions and initiatives have been implemented to enhance 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. The global outbreak of the COVID-19 pandemic - which has occasioned different containment measures including social distancing, demanding fewer people to achieve production tasks efficiently and timely - has enhanced the significance of Conservation Agriculture (CA) and Sustainable Agricultural Mechanization (SAM) practices.

The good news is that across Africa, governments, development practitioners and private companies have re-discovered Conservation Agriculture and sustainable agricultural mechanization as top priority. Furthermore, the conversations on development of sustainable agricultural mechanization naturally embraces improvement of agricultural techniques as well as sustainability of the entire agricultural system. ACT has continued to evolve, taking lead in facilitating and enabling knowledge, information and experiences sharing amongst Africa's agricultural stakeholders. It is in ACT's strive to establish and execute appropriate knowledge and information sharing platforms and institutions to serve the unique interests of different target groups at different levels in the continent.

In another dimension, ACT continues to encourage our beloved members and friends to safeguard themselves from the COVID-19 pandemic. We continue to closely monitor the situation, adopt precautionary measures as required to ensure that our projects and network's activities continue in a safe mode.

ACT acknowledges the various sources, authors, reporters, organizations and practitioners whose articles appear in this March – April 2021 issue. Their diversity is clear testimony of the enthusiasm and interest from various organizations, countries, researchers and scientists towards CA and SAM amid the current global pandemic. We encourage you to share your CA and SAM views and articles capturing their status and extent of adaptation and adoption 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 or re-posting of some articles.

Joint Efforts on Operationalization of the Framework for Sustainable Agricultural Mechanization in Africa: Third Webinar: The Increasing production and productivity in agriculture by accelerating adoption of mechanization: A case of Nigeria and Cameroon.

Photo Credit: FAO

The third (3rd) webinar in series was a build-up of the first and the second, but with more focus on specific countries, Cameroon and Nigeria. This Webinar targeted public and private stakeholders including but not limited to Directors and Heads of Agricultural Mechanization Services, Farmers Organizations, Private Sector, Non-Governmental Organizations (NGOs) and Academia. This was organized to provide an opportunity and create participatory environment for different countries towards the establishment of national and regional implementation mechanism of F-SAMA. The Webinar provided a platform to share information and update on the efforts being made in spearheading mechanization as an important pillar for agricultural transformation in Cameroon and Nigeria. It triggered precepts and insights on how putting down concrete action plans helps the countries to attain their goals of developing and increasing the use of mechanization. In addition to presentations, questions and answers sessions was implemented to generate more insights into the issues being discussed. Experts from FAO, AUC and ACT shared experiences on the importance of mechanization and made clarion call on the need for joint efforts to operationalize the F-SAMA.

The fundamental principle behind this initiative is to enhance and concentrate efforts towards acceleration of sustainable agricultural mechanization (SAM) in the continent. This is based on the fact that SAM currently in Africa is a priority matter and an indispensable pillar for attaining the Zero Hunger vision by 2025, as stated in *the Malabo Declaration of 2014* – Goal 2 of the Sustainable Development Goals – as well as in the Prosperous *Africa We Want of Agenda 2063*. Doubling agricultural productivity and eliminating hunger and malnutrition in Africa by 2025 will not be realized unless mechanization is accorded utmost importance.

It is indeed beyond reproach that for SAM mainstreaming in national and regional spheres, substantial and concerted political and financial commitment is critical. Without long-term commitment, the prospects for African agriculture and farmers are likely to remain bleak. Therefore, this joint effort by FAO, AUC and ACT among other stakeholders to operationalize F-SAMA is geared towards activating the required national and regional commitment.

The Third Webinar continued to demonstrated the joint actions to operationalize F-SAMA and illustrate the different pathways to promote, access and use of mechanization in Nigeria and Cameroon.

To overcome the language barriers, Webinar proceeding was translated between two languages English and French.

From the in-depth discussions during the webinar, it became apparent that a participatory environment and inclusive stakeholder involvement is key for the development and promotion of mechanization in SSA. The fundamental principle in this discourse is the need to increase production and productivity in agriculture, by accelerating the access and use of mechanization, digitalization and supportive technologies on the entire agri-food chain.

The Webinar series are providing a platform for enhancing the sharing of experiences and networking, meant to address real challenges to operationalization of the SAMA. The AfricaMechanize platform provides a unique opportunity for sharing challenges and how they have been tackled as well as sharing of success stories for scaling and to eventually unlock the potential of the agricultural sector in the continent.

Get more information on the webinar's proceeding from the following links:

- Website link to AfricaMechanize: https://www.africamechanize.org/
- Webinar recording: https://www.africamechanize.org/webinar3-recording-english/
- Webinar speakers' bios': https://www.africamechanize.org/webinar3-speakers-english/
- PowerPoint presentations: https://www.africamechanize.org/webinar3-presentations-english/
- Webinar downloads: https://www.africamechanize.org/webinar3-downloads-english/

Africa-Mechanize Knowledge Platform

AfricaMechanize is a Sustainable Agricultural Mechanization (SAM) platform aiming to enhance Knowledge Management, Information sharing, Networking & Partnerships in Africa. The platform has been developed under the AU Sustainable Agricultural Mechanization framework for Africa (F-SAMA) operationalization initiative with FAO providing technical support and ACT providing secretariat functions. It is focused on contributing to the operationalization of all elements of F-SAMA given the cross-cutting nature of knowledge management. It is also an all-inclusive, not-for profit neutral platform addressing the SAM and developmental interests of all AU Member States with support of the national governments, development partners and private sector.

The genesis of the platform date back to Consultative Meeting on a Mechanization Strategy New Models for Sustainable Agricultural Mechanization in sub-Saharan Africa held in Nairobi, Kenya in 2016, where the participants reached a consensus on need for formation of a virtual SAM knowledge exchange platform. ACT was asked to initiate the process. Besides, the Conservation Agriculture (CA) stakeholders who attended the Second Africa Congress on Conservation Agriculture (2ACCA), which met in Johannesburg, South Africa from 9th to 12th October 2018 highlighted and recognised that Sustainable Agricultural Mechanization (SAM) is an important enabler in accelerating widespread adoption of CA and attainment of the Malabo Declarations' Vision 25 x 25 and the Agenda 2063. It urged ACT to advance appropriate African focused mechanisms and thrives that will largely deliver suitable SAM and support the propagation of self-sustaining development of the agricultural mechanization in Africa

Register with the platform to be able to participate in the webinar series and get updates on the link https://www.africamechanize.org/

No-till farming makes soil more resilient to climate change – Expert

Soil erosion has become an increasing concern as climate change destroys soils due to droughts and floods. But a practice known as Conservation Agriculture also known as No-Till Agriculture does not only protect the soil but saves farmers time and money.

At far east of Kparigu in the North East region of Ghana is a farmer who tills the soil. Ibrahim Watara is preparing the land for the season. The age-old practice to till the soil is a means of preparing the seedbeds, releasing nutrients to crops, and controlling weeds. But according to scientists, tillage poses a greater risk of erosion with potentially disastrous consequences. The loss of topsoil destroys farmlands and causes environmental pollution.

Changing to a healthier production system may pose new challenges, but is worthwhile in the long run. Glenneis Kriel spoke to a number of influencers and pioneers about making the switch.

Scientists say global soil degradation issues are compounded by climate change and also frequent extreme weather events have an increased impact on land degradation. The service centre manager at the Centre for No-Till Agriculture says there is a solution and that is Conservation Agriculture. Read More or watch the video on No-Till

Soil health: farming with nature, guided by science

Two decades ago, ZZ2 embarked on a journey that steered away from conventional agriculture towards a system more in tune with nature. They called this farming approach Natuurboerdery.

It is based on a set of principles aimed at economic, social and environmental sustainable agriculture, inspired by insights gained from living ecosystems.

The approach is much broader and encompassing than 'conservation farming', which makes use of minimum- to no-till, stubble retention and crop rotation to conserve soil health, and includes most of the components of regenerative agriculture, such as the use of mulching, compost teas and compost to build soil health.

Natuurboerdery seeks not only to regenerate, but to improve and actively build productive and functional novel ecosystems. Retief du Toit, a member of ZZ2 who has been using Natuurboerdery since 2001, talks about his experiences with this farming approach on the farms Lorraine in the Warm Bokkeveld and Bokveldskloof in the Koue Bokkeveld. Read More

Soil health is food wealth

As the climate warms, extreme weather of droughts, floods and high temperatures are affecting agriculture, threatening food security in Africa. Smallholder farmers are barely able to put food on the table as they work on exhausted soils that only produce poor crop yields, if anything. Erratic and excessive rainfall patterns have also contributed to reduced crop production. Scientists are promoting climate smart agriculture (CSA) approaches that are helping smallholder farmers tackle poor crop yields, degraded soils, and low soil fertility.

Conservation Agriculture (CA) is one approach under climate smart agriculture that is taking root across Africa. It is enabling smallholder farmers to produce crops closer to nature by avoiding excessive soil tillage, abandon burning or removing of crop residues and practice crop diversification. The combined use of those principles maintains crop productivity, stabilizes crop yields and in the longer run also builds soil quality and health. In particular, the application of CA principles preserves soil moisture and enhances soil fertility through the application of nutrients to the soil such as manure and fertilizer. Other complimentary practices such as improved seed and weed control methods, and mechanization improve the efficiency of farming and save on farm labour.

Crops grow well if the soil is healthy, so soil health is important.

Elufe Chipande from Zomba District in Southern Malawi is one of the early adopters of Conservation Agriculture. She testifies that shifting from conventional agriculture to the CA approach has transformed her farming. Chipande (62) who has been practising CA for the past 14 years used to harvest up to 2 tonnes of maize per hectare using only improved maize seed. Shifting towards CA techniques has quadrupled her harvest to 8 tonnes per hectare and she now has excess grain to sell to increase her income while ensuring her family has enough to eat up to the next farming season. The secret, she says, is in the promotion of soil health. Read More

Earth Day 2021: Restoring agriculture to transform food systems

COVID-19 may have forced the 50th anniversary of Earth Day to be commemorated online last year, yet millions of people participated in calls to action. As we begin to look beyond the pandemic, however, it's vital to remember that we cannot go back to business-as-usual as far as our planet is concerned.

Against the backdrop of Earth Day 2021's theme of "Restore Our Earth," IFPRI's 2021 Global Food Policy Report (GFPR) urges us to invest in nature-based solutions for sustainable food systems. With a clear acknowledgement of the zoonotic origins of the pandemic, the GFPR charts a course for food systems beyond COVID-19—systems that achieve healthy diets for all while acknowledging the intertwined relationship between agricultural production and ecosystem health. GFPR Chapter 4 focuses on rethinking food system policies in terms of "eco-agro-food systems" to foster such an integrated approach: Maintaining and restoring vital ecosystem services and reducing the likelihood of future shocks to food and health systems.

Agro-ecosystems are the largest terrestrial ecosystems in the world, occupying 34% of all land on the planet, but they are also the primary driver of environmental degradation—agriculture withdraws 70% of freshwater and is responsible for most recent losses in biodiversity globally.

Furthermore, the coronavirus pandemic has revealed the extent to which intensified human–wildlife interactions linked to habitat loss can lead to the emergence of deadly new zoonotic diseases. Key to reversing these dysfunctional trends is a reconceptualization of food involving the concept of eco-agri-food systems. To be able to draw on critical ecosystem services and functions such as pollination, soil fertility, nutrient cycling and biological pest control, we need to consider entire value chains. This means accounting for all externalities, not just during production. It also means expanding our goals beyond agricultural productivity and economic growth.

An appreciation of how biodiversity contributes directly and indirectly to agriculture, and thereby to our well-being, leads to the possibility of all food producers—from smallholder farmers to larger agribusinesses—to work toward more "nature-positive" production that meets food needs and protects, maintains and restores ecosystems. Read More

Pioneering Conservation Agriculture in Uganda with zero tillage & multi-crop rotation.

Asili Farms, a fully-mechanized farming company, manages dual-season production of high quality maize and soybeans for supply to regional food processors. Asili became operational in January 2014 and is currently farming on 1,200 ha of land in Western Uganda under a Conservation Agriculture and precision farming approach to maximize yields efficiently and sustainably.

The ultimate strategic goal of Asili is to have commercial farming operations on around 6,500 ha of long term leased land. As part of the Agilis Partners Ltd. Company holding, Asili Farms (AF) benefits from the guaranteed demand from the sister-company Joseph Initiative Limited (JI), which is marketing Ugandan grains and pulses with extensive regional market access.

CFC resources are expected to be used to further expand commercial farm operations as well as to scale out Asili's engagement in training small-scale farmers in commercial maize and soya production as the main source of maize and soya supply for JI. Through value chain integration and volume increase both, AF and JI, reciprocally mitigate risk and increase their viability.

Training of smallholder farmers and their subsequent integration into the supply network of the Joseph Initiative will have a substantial development impact on the "bottom of the pyramid". Asili's role as the "technology transfer centre" of the Agilis Group will provide "state of the art" knowledge for an estimated 50,000 smallholders who will be exposed to adapted curricula and services offered, that will enable them to duplicate Asili's Conservation Agriculture approach onto their small farms.

It is estimated that maize yields will increase from currently 1.5 tonnes per ha/harvest up to 5 tonnes /ha/harvest, and soya yields from 0.75 tonnes /ha up to 2.2 tonnes /ha. Targeted farmers will also be incentivized to scale out their production which will further increase their net income by a projected total of USD 1,400 per year. In addition, 270 jobs will be created directly through Asili's core farming operations. Read More

Conservation Agriculture improves adaptive capacity of cropping systems to climate stress in Malawi

Adaptation to climate stress is an unprecedented challenge facing cropping systems. Most adaptation assessments focus on how adaptation options affect yields of a single crop under different weather or climate conditions. Yet, cropping systems often comprise more than one crop, and holistic assessments should consider all crops grown in a cropping system. One adaptation option is Conservation Agriculture that is commonly defined around a set of three principles: minimum mechanical soil disturbance, permanent soil organic cover, and crop species diversification.

Practicing some or all the principles of Conservation Agriculture reduces the negative effect of heat stress for maize on cropping-system yield

Here, a study was done to examine how cropping-system yields were affected by the principles of Conservation Agriculture, and the interaction of these principles with precipitation balance (precipitation minus reference evapotranspiration) and heat stress for maize under different combinations of maize variety and rotation. The study used data from on-farm trials in ten communities and 14 seasons in the Central Region and Southern Region of Malawi. The study developed two main conclusions. First, practicing some or all the principles of Conservation Agriculture reduces the negative effect of heat stress for maize on cropping-system yield. This complements existing evidence that Conservation Agriculture can improve the adaptive capacity of maize to heat stress. Second, a positive interaction existed between precipitation balance and heat stress for maize when maize was rotated with a legume. We examined all crops grown in the cropping system rather than yields of only one crop (such as maize) per se as ultimately we must consider how the whole cropping system may contribute to climate adaptation. Our results suggest that Conservation Agriculture can reduce some of the detrimental effects of heat stress for maize on cropping-system yields, which is pertinent to the looming challenges of climate stress facing farmers. Read More

Long-term Conservation Agriculture improves water properties and crop productivity in a Lixisol

Climate variability increasingly affects smallholder farmers in southern Africa. Conservation Agriculture (CA) practices have been proposed to improve the resilience of farming systems against the adversities of climate, specifically moisture stress. However, lack of detailed field data on soil water and chemical dynamics leads to over-reliance on simulation models without concrete evidence and ground-truthing of results. Here, we test the effects of different CA and conventional tillage (CP) practices on soil moisture content and water infiltration rate over a 14-year trial period. We also report soil chemical properties measured over 10 years from 0 to 30 cm soil depth. As study object, we used a CA long-term trial at the Monze Farmer Training Centre in Southern Zambia as it included different cropping systems and had parallel infiltration, soil moisture, soil chemical and crop yield measurements. Our results showed significant differences in average soil moisture in the first 60 cm among the cropping systems in different years with the basins plus mulching system having highest moisture content in most of the years.

The interaction of cropping systems and years significantly affected water infiltration rate with highest final infiltration rates averaging 48.5 mm h–1 in the CA-based systems and the lowest in CP which averaged 12.6 mm h–1. Soil chemical properties did not significantly differ across the systems but across seasons and depths or their interaction. For crop yield, a direct seeded maize-cotton rotation (DS-MC) consistently had the highest grain yields across most of the years as compared to the CP practice. Maize grain yield significantly differed among the years with a strong influence from the rainfall. Regression analysis revealed significant effect of seasonal rainfall on both soil moisture content and crop yield. The DS-MC system showed high responses of grain yield to rainfall and moisture. This was caused by increased available water and a greater buffering capacity against water stress in the cotton rotation. Systems that conserve moisture, increase infiltration and yield are of paramount importance in environments of variable rainfall. CA-based systems may therefore have the potential to buffer the effects of climate variability and may provide greater resilience. Learn More

Basic principles of Conservation Agriculture – ARC

In South Africa, crop production systems based on intensive and continuous soil tillage have led to excessively high soil degradation rates.

This adds to the growing problems with profitability and poverty in some rural areas. There is general agreement that sustainable and economically viable agriculture will be achieved through the adoption of regenerative and Conservation Agriculture principles and practices.

Conservation Aagriculture is seen as an ideal system for sustainable and climate-smart agricultural intensification, through which farmers can attain higher levels of productivity and profitability while improving soil health and the environment.

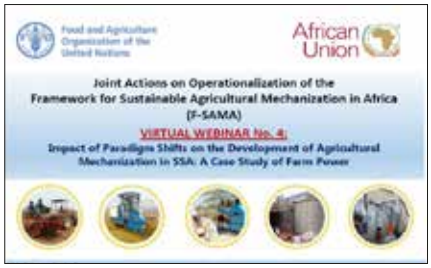
In a video series in collaboration with the Maize Trust, Denene Erasmus, editor of Farmer's Weekly, speaks to Mmakgabo Matlou, senior researcher in soil science at the Agricultural Research Council (ARC), about the basic principles of Conservation Agriculture. Learn More - Watch on YouTube

Video: Scaling up Conservation Agriculture in Mozambique

FAO's Flexible Multi-Partner Mechanism (FMM) sub programme: "Strengthening coordination and partnerships for scaling up Conservation Agriculture in Southern Africa" promotes good Conservation Agriculture practices in horticulture in Mozambique. View on You Tube

Events and Opportunities

VIRTUAL WEBINAR No. 4: Joint Actions on Operationalization of the Framework for Sustainable Agricultural Mechanization in Africa (F-SAMA)



Title: Impact of Paradigm Shifts on the Development of Agricultural Mechanization in SSA: A Case Study of Farm Power

Date: Tuesday, 04th May 2021

To sustain the momentum of the continental information exchange through the Webinars initiated in 2020 (as contained in the https://www.africamechanize.org/webinar-portal/), the next series of Discussions/Webinars under the Africa Mechanize platform for 2021 will be organized around the ten elements of F-SAMA; as an assurance and in compliance to the African Union's long-term vision of agricultural development and food security of the continent and in attaining the Malabo goals. 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).

This 4th virtual webinar is targeting public and private stakeholders including but not limited to Directors and Heads of Agricultural Mechanization Services, Farmers Organizations, Private Sector, Non-Governmental Organizations (NGOs), Researchers and the Academia. This is the fourth Webinar in a series and is organized to provide a better understanding on how paradigm shifts on the development of agricultural mechanization in sub-Saharan Africa (SSA) have affected efforts to boost access to farm power.

The Webinar will provide a platform to share information and in-depth discussion on the understood and preferred mechanization philosophical frameworks (paradigms) guiding advocacy and actions of policymakers and development partners in Africa. How have changes in such paradigms affected or boosted access to farm power and the development of agricultural mechanization in the continent? The Webinar brings experts in the area to lead the discussions. The Webinar will be held in English and French and participants can engage by posing their questions and answers using the Chat facility provided in the Zoom meeting.

More information on the 4th webinar can access through English Version Announcement / French Version Announcement

To participate in the webinar registration is required. Please register in advance using the Africa-Mechanize website at**:** www.africamechanize.org

NB: You will also get information and updates from upcoming webinars in this website/platform www.africamechanize.org

The 8th World Congress on Conservation Agriculture (8WCCA), scheduled for June 21st to 24th, 2021 in Zollikofen, Bern, Switzerland

The Organizing Committee invites you with great pleasure to the 8th World Congress on Conservation Agriculture (8WCCA) (https://8wcca.org/, which will be held as a virtual meeting in Bern, Switzerland from 21st – 25th June 2021.

The theme of the Congress is: ***The Future of Farming: Profitable and Sustainable Farming with Conservation Agriculture***. The online in-door Congress will be held from June 21st to 23rd, 2021 in 'Bern', Switzerland. A two-day programme of Field Days on June 24th and 25th will be organized to allow for a broad and safe

participation of all interested participants. The Field Days will take place at the estate 'Witzwil', about 40 minutes away from Bern.

The 8th World Congress on Conservation Agriculture provides you with the unique opportunity to shape the future of "Profitable and Sustainable Farming with Conservation Agriculture". During the three days of the Congress, manifold topics will be discussed in depth in plenary sessions, panel discussions, parallel sessions and poster sessions, with the objective to promote a wider adoption of CA worldwide.

More and updated information about the congress are available on the 5th Announcement / http://www.fao.org/conservation-agriculture/en/

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Norad

ACT acknowledges the partnership and financial support provided by the Norwegian Agency for Development Cooperation (NORAD) towards Promotion of Conservation Agriculture in Africa