AFRICAN CONSERVATION TILLAGE NETWORK
*Partnering for Economic Growth, Improved Food Security and a Better Environment*
11/12
# Updates & News Alert
November
December
2016

ALSO IN THIS ISSUE



## End of Year Message from ACT Executive Director

Dear colleagues,

The year 2016 has been another successful one for ACT as we continue to build new and stronger partnerships, uncover new and more efficient frontiers for serving farmers and other on-the-ground stakeholders while contributing to global and regional alliances to unlock policy and investments support for no-tillage based sustainable Conservation Agriculture (CA).

The prolonged drought in Southern Africa and climate change challenges in the rest of the continent have resulted in "islands of hope" for farmers practicing CA, providing proof of the concept and the justification to scale up CA to millions of adopters. The resilience and successful transformation of these farmers and the restoration of degraded landscapes make our work inspiring.

We are pleased to welcome new project partners, staff and International CA Advisory Panel for Africa (ICAAP-Africa) panellists. We look forward to growing opportunities in 2017, including the full functioning of countries' CA Centres of Excellence, Entrepreneurial Mechanized CA Service Providers, and the Second Africa Congress on CA (IIACCA).

Thank you all for your patronage in 2016. We are looking forward to the very best in 2017.

I take this opportunity to thank you and wish you and your families, happy holidays.

**Saidi Mkomwa**

## Editor's view: Introducing the November & December 2016 CA Alert

This November and December 2016 issue of the no-tillage based Conservation Agriculture (CA) alert has a special focus on Kenya.

Kenya's agricultural sector provides livelihood to about 90% of the total population, employs 85% of the total rural labour force, and generates over 60% of the foreign exchange earnings. Agriculture is, therefore, the most important sector of Kenya's economy. With a population of 44 million and a high annual growth rate of 2.7%, the need is urgent to enhance land and labour productivity in order to realize food self-sufficiency, absorb the increasing rural labour force, and reduce the level of poverty of most of Kenya's population. Agriculture in Kenya, like in other countries in the world, has seen continuous changes to respond to the needs of the society, which have contributed to the gradual intensification of agriculture that has evolved through adopting new sustainable technologies and appropriate mechanization.

Farming techniques have evolved from traditional practices to conventional and currently, to conservation and precision agriculture. These advances are geared towards improving productivity and meeting the rising demand for food, as well as mitigating the degraded environment.

*(Continued on page 2)*

**Editor's view**
*(Continued from page 1)*

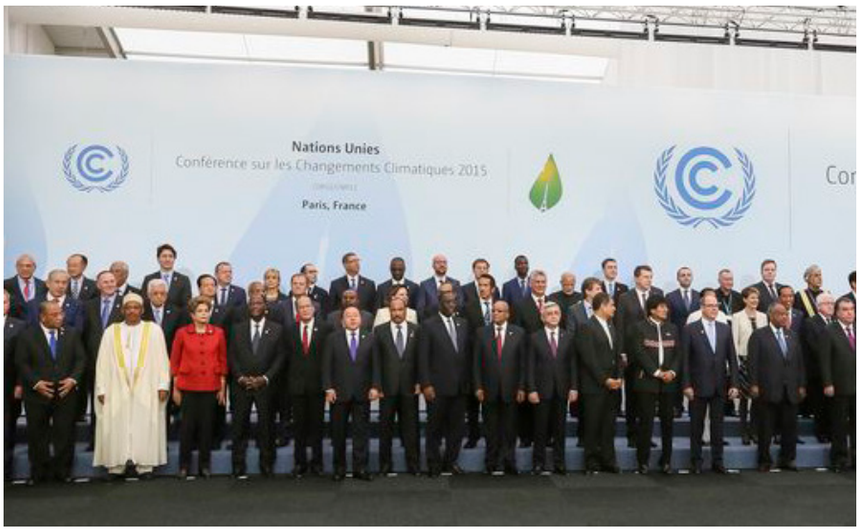
There is sufficient evidence that CA offers options that over time increase the productivity of smallholder production systems sustainably as well as their profitability and resilience without compromising the environment. To achieve impact CA must be tailored to the agro-ecological and socio-economic contexts of smallholder farmers. Documented impact and feedback from practising CA farmers have shown that CA significantly increases yields and agricultural productivity in a sustainable manner even for poorly resourced farmers, improving their food security and often enabling them to sell surplus.

ACT acknowledges the various sources, authors, reporters, organizations and practitioners whose articles appear in this November issue. It is testimony of the enthusiasm and interest from various organizations, countries, researchers and scientists in Africa's development. ACT appreciates the contribution of Marrakech COP 22 actions planners and implementers; of FERT-RCM-ECAF-ACT - organizers and participants of COP22 side event on No-till CA in Africa and Mediterranean regions; the Global Conservation Agriculture Network (GCAN) for the Network launch at COP22 side event; Laurie Sessions, KALRO and AGRA for the articles from Kenya; of Reinette and Habig for their article Influence of biotic and abiotic factors on plant health; the No-Till Farmer for their article on Does grazing of cover crops by cattle compact soil; and of FAO for their report on the Agriculture Sectors in INDC.

Notable upcoming events include the 7th World Congress on Conservation Agriculture (7WCCA) being organized by CAAPAS and AAPRESID to take place 31 July to 2 August 2017. The venue, currently suggested as Buenos Aires, will be confirmed later.

To showcase what is going in various African countries on Conservation Agriculture, ACT features country-focused articles in its monthly News Alerts. The articles capture and discuss the status and extent of adaptation and adoption of CA in a particular country. We encourage you to share your CA views and articles in time for the planned CA news alerts in those countries. We also encourage bookings for proposed focus country articles for 2017. Please submit articles, links or views to: kim@act-africa.org

# Nations take forward global climate action at 2016 UN Climate Conference




World Leaders Issue Proclamation Underlining 'Irreversible' Momentum. Countries accelerated the global climate action across a broad range of areas at the 2016 UN climate change conference as they fast-tracked the political and practical aims of the historic Paris Climate Change Agreement. Among the many new announcements and initiatives launched were multi-billion and multi-million dollar packages of support for clean technologies, building capacity to report on climate action plans, and initiatives for boosting water and food security in developing countries.

Meanwhile, governments set a rapid deadline of 2018 to complete the rule book for operationalizing the Paris Agreement to ensure confidence, cooperation and its success in the years and decades to come.

Businesses, investors, cities and local governments also issued new climate change commitments, adding to the thousands announced in the run up to the Paris climate conference last year.

The High-Level Climate Champions launched the ***Marrakech Partnership for Global Climate Action*** to provide a strong roadmap for how the UNFCCC process will catalyze and support climate action by Parties and non-Party stakeholders in the period 2017–2020.

In agriculture, two initiatives were launched: the ***Adaptation for African Agriculture*** initiative aims to build the resilience of farmers in Africa by promoting sustainable soil management, better water management and risk management linked with tailored capacity development, policies and funding mechanisms; and the ***Global Framework on Water Scarcity*** that supports countries to integrate climate change and sustainable water use into agricultural sector policies and cross-sectoral dialogue.

For more information: http://newsroom.unfccc.int/unfccc-newsroom/nations-take-forward-global-climate-action-at-2016-un-climate-conference/

MARRAKECH COP22|CMP12
UN CLIMATE CHANGE CONFERENCE 2016

# COP 22 side events

***Climate change mitigation and sustainable food security with Conservation Agriculture in Africa and the Mediterranean Region***

The African and Mediterranean populations have for several years now directly suffered the effects of climate change; rural populations are particularly affected. Indeed, farmers are in the front line and face severe consequences of disturbed local climates, but farmers can also play an important role in developing locally adapted and sustainable solutions.

Four international networks have come together to address CA development in Africa and the Mediterranean: RCM (Réseau Innovation Agro-systèmes Méditerranéens; www.rcmed.org), ACT (African Conservation Tillage Network www.act-africa.org); ECAF (European Conservation Agriculture Federation (www.ecaf.org); and the Global CA-CoP (Global Conservation Agriculture Community of Practice (www.fao.org/ag/ca) hosted by FAO. The Hassan II Institute of Agronomy and Veterinary Medicine introduced this side event. The NGO Fert and IAV Hassan II provided logistics.

This event was held 7 November 2016 from 1500h to 1630h in the green zone of COP22. About 60 persons including farmer organizations, networks, researchers, teachers, private sector representatives and policymakers attended this side event. Participants formulated recommendations and invited the organizers to hand over a copy of these recommendations to the COP22.

For details on the recommendations:

www.act-africa.org/lib.php?com=5&com2=20&com3=92&res_id=220

***The Global Conservation Agriculture Network (GCAN) Side Event***

The recently-launched network has been busy promoting the advantages of Conservation Agriculture at home. GCAN hosted a conference on the advantages of CA in the Green Zone of COP22 in Marrakesh and also participated in the launch of the 4 per 1000 forum and consortium. GCAN is a network of CA supporters from around the world and abroad with members including farming organizations, researchers and policymakers.

COP22, the international conference on climate change, took place from 7 to 18 November in Marrakesh, and signatories of the Paris Agreement discussed how to prevent rising global temperatures. It was the 'COP of action', according to European Commission Climate Commissioner, Miguel Arias Cañete, and it was the 'COP of agriculture' according to the Moroccan government, the host and President of the conference. Though official negotiations did not result in any concrete actions concerning agriculture, solutions did emerge in the Green Zone.

Read more about this, and the GCAN here. http://www.cop22-morocco.com; http://tinyurl.com/z38nkgf

## World experts meet to discuss solution

**Farmers and experts from GCAN highlighted the benefits of conservation agriculture in mitigating the impact of climate change and ensuring greater food security.**

# Conservation Agriculture as practised in Kenya

## Profitability of appropriately mechanized Conservation Agriculture: a case of Lengetia Farm

Lengetia Farm is located in Naro Moru area and is owned and managed by Mr and Mrs Laurie Sessions. It borders large wild game and livestock ranches, and falls within zone V (lower highland ranching zone) where annual rainfall ranges between 450 and 600 mm. The farm has red and black volcanic soils. Wheat and barley are the main crops, and canola and sunflower are currently rotational crops. Before adopting CA, Mr Sessions had used conventional tillage practices to produce wheat and barley for 25 years while facing a myriad problems ranging from declining soil fertility, high fertilizer requirements and high production costs associated with high oil prices, to increased soil erosion and emergence of plough pans translating to high production costs (Kaumbutho et al., 2007).

However, since he converted to Conservation Agriculture last 14 years, his returns have improved drastically, which has enabled him to graduate to a precision farming practitioner with fully computerized and mechanized systems that continue to give him a competitive edge on low production costs and high produce prices. To date, he is one of the few CA adopters in the region who have fully exploited the advantages of CA technology. This has enabled him to reduce the break-even point for wheat from 2.5 t/ha to 1.3 t/ha, and increase yields from 3 t/ha to 4.4 t/ha.

Sessions confirms that soil quality has improved since he started using CA, which he attributes to the decomposition of crop residues. He analyses soils and can track improvements in soil fertility in various fields. Over the years, he has progressively reduced use of inorganic fertilizer and he now uses between 25 to 35 kg of fertilizer per acre, depending on the soil analysis results, to supply sufficient nutrients for crop growth. Soil moisture has been retained all through the years and soil fertility has improved. He says the use of controlled traffic for farm machinery has reduced soil compaction.

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Mr Sessions owns assorted machinery for these operations, which include disc ploughs, disc harrows, chisel ploughs (most of these are no longer in use after converting to CA), direct seeders, precision planters, hay balers, combine harvesters (fitted with forage choppers), boom sprayers, tractor rippers, trailers, oil press among others. His farm operations are highly mechanized. He also owns smaller equipment like walking and two-wheel tractor planters cum sprayers that he rents out to small-scale farmers. Other equipment include jab planters, shallow weeders and weed wiper (Zamwipe), mainly for use by the small-scale farmers and in training.

For more information: http://tinyurl.com/hq4ecm8

**Mr. Session shows visitors at his Lengetia farm the assortment of equipment that he uses.**

## Conservation Agriculture promoting food security, resilience and profitability in Kenya

Smallholder farmers are practical people in need of practical solutions to the myriad challenges confronting them, including the vagaries of climate change. Improving productivity for smallholder farmers in Kenya is one way of realizing food security. ACT has partnered with KALRO to implement a project to promote Conservation Agriculture for food security, resilience and profitability in Laikipa and Machakos Counties. In this three-year project funded by AGRA, smallholder farmers have seen tremendous changes in farm productivity. The project has demonstrated the soil–water conservation and yields benefits associated with the three principles of CA. For example, maize yields were on average 121% higher than in the conventional practice, which yielded on average 1.5t/ha. In addition, there was a significant labour saving of US$52/ha because of minimum tillage. Mulch and cover crops significantly contributed to soil moisture conservation during the dry spell. These attributes enable farmers practising CA to harvest even during dry seasons, unlike their conventional farming colleagues.

For more information watch the video: https://www.youtube.com/watch?v=qkDyJ2HgiL0 or http://ca4fs.act-africa.org/

**Current situation – residue, healthy crop, happy farmer, Grace Migwi, Laikipia**

## Africa transforming agriculture to combat climate change

As Africa grapples with climate change-induced extreme weather patterns, mechanisms to transform agriculture and ensure food security through adoption of innovative ways are gaining prominence.

In Kenya, like in most African countries, small-scale farmers, who make up the majority, are opting for sustainable solutions. One such farmer is Albert Waweru, a retired police officer, who has a 1.75-acre farm in Kasarani, on the outskirts of Nairobi. He has 50 dairy cows that produce 290 litres of milk daily. He also rears poultry, dairy goats, and has several greenhouses where vegetables are grown.

But he is no ordinary smallholder farmer. He has taken to what experts call climate smart agriculture. For example, to counter the challenge of water scarcity, he harvests rainwater from the rooftops and storm water flowing into his compound.

**Vegetable on Albert Waweru's farm at Kasarani, on the outskirts of Nairobi. Photo: Justus Wanzala | IDN-INPS**

Sharing knowledge and best practices among countries and individual famers is important. Participants shared this view during the Second Africa Climate Smart Agriculture (CSA) Alliance conference held 11–13 October 2016 in Nairobi. They said sharing will enhance adoption of best practices suitable to the needs of each country. The Alliance is a continental platform formed to help smallholder farmers reduce climate risks.

The New Partnership for Africa's Development (NEPAD) Agency convened the meeting in collaboration with the Government of Kenya. The Africa CSA Alliance is spearheading implementation of the African Union's Vision to reach 25 million farming households practicing CSA by 2025. This is in line with the Comprehensive Africa Agriculture Development Programme's (CAADP) 2015–25 Results Framework.

For more information: http://www.indepthnews.net/index.php/the-world/africa/746-africa-transforming-agriculture-to-combat-climate-change

## Sowing hope in Kenya

In the villages around Kambu in eastern Kenya, farmers look to the heavens with brows furrowed with concern. The two rainy seasons each year are critical to these farmers in one of Kenya's driest regions, who depend on these showers to water their crops. Now, white, puffy clouds dot the sky, but no rain is falling. The ground where they will sow their seeds in the coming weeks is dry and dusty. But a group of farmers believes they will fare well during the dry spell. They are part of a coalition of 54 farmer groups called Muungano Nguvu Yetu, a partner of the Lutheran World Relief. These farmers are not as anxious about the lack of rain because of a farming technique called "ripping" that has dramatically increased their farm production, even when water is scarce. Ripping is a Conservation Agriculture technique. Conservation Agriculture is a set of soil management practices that minimize the disruption of the soil's structure, composition and natural biodiversity through the use of three principles: minimal soil disturbance, permanent soil cover, and crop rotations.

Ripping is done by a tractor-towed plough that digs a foot-deep furrow, allowing seed to germinate in soil that retains much more moisture, even in dry conditions. This allows for large harvests during a good rainy season, and at least some production when rains fail. The plough is made up of a first blade that cuts existing vegetation, a second vertical blade that cuts deep into the soil and breaks up the soil hardpan, and a third blade that breaks up clods of dirt. The spacing between the troughs is undisturbed, helping to reduce erosion and channelling water into the troughs.

David Mbungi, who is 68 years, said the farming techniques introduced—known as Conservation Agriculture—have quadrupled his production of mung beans, a highly valued cash crop. These techniques are useful to him because even with scarce rain this season, mung beans are still sprouting. Thanks to the soils' retained moisture.

For more information: https://lwr.org/blog/sowing-hope-in-kenya

## Other CA resource materials related to Kenya

1. Manor House Agricultural Centre (MHAC) - Kitale, Kenya: Development and transfer of Conservation Agriculture production systems for small-holder farms in eastern Uganda and western Kenya. http://www.mhacbiointensive.org/research.html
2. Conservation Agriculture in Kenya: analysis of past performance and emerging trends. http://conservationagriculture.org/uploads/pdf/ca_progress_in_kenya_kowino_et.al_2010.pdf
3. Conservation Agriculture Infonet Biovision. http://www.infonet-biovision.org/EnvironmentalHealth/Conservation-agriculture
4. Makueni farmers beat climate with conservation farming. http://www.nation.co.ke/business/Farmers-beat-climate-change-with-conservation-farming/996-2345594-t7lxpxz/index.html
5. Kenya Network for Dissemination of Agricultural Technologies (KENDAT). http://www.kendat.org/causes/conservation-agriculture/
6. Africa Conservation Tillage Network. http://act-africa.org/index.php?com=1 and videos on various aspects of CA in Kenya and Africa https://www.youtube.com/channel/UCofLj9el5ShyQny3xcWR4DA
7. Conservation Agriculture in Laikipia County. https://www.youtube.com/watch?v=aDl1eGAul5E

# Sustainable Agricultural Mechanization in Sub-Saharan Africa, Dec 1-3, 2016

Consultative meeting on Sustainable Agricultural Mechanization in Sub-Saharan Africa, Dec 1-3, 2016. Co-hosted by FAO, the World Bank, AGRA, African Conservation Tillage Network, UNIDO and others, the event attracted over 100 international agriculture and food experts, including from 27 African countries to discuss ways to boost agricultural mechanization for the benefit of smallholder farmers in Sub-Saharan Africa (SSA). The aim of the consultative meeting was to identify new models for sustainable agricultural mechanization. Farm mechanization has huge potential for increasing agricultural production and transforming rural families' livelihoods by reducing drudgery in the field, enhancing sustainable intensification, more efficient use of farm inputs as well as making food-growing activities more "climate-smart." Participants visited two sites in Nanyuki district and saw first-hand the benefits of smallholder and large-scale mechanized Conservation Agriculture and its potential to increase productivity and farmer incomes. One of the main conclusions of the event was that agricultural mechanization needs to be adapted to local conditions, because no one recipe exists for the differing ecological conditions in which African farmers operate and the crops they grow. Besides local adaptation, it is crucial that agricultural mechanization be environmentally responsible, locally compatible, economically viable and climate-smart. FAO, in collaboration with partners, is taking the lead in developing an updated concept note to advance sustainable mechanization in Africa. The action-oriented note with clearly-identified responsibilities will be tabled at the high-level meeting of the African Union Commission for endorsement in 2017. ACT has set-up a dedicated website for the event (link) and the initial concept note is here.

In her high level reflection of the event, H. E. Ambassador Grace Akello, Chair of Africa Regional Group of Ambassadors and Permanent Representatives in Rome, described it as "the journey we have just begun" and narrated the findings in an article titled "Sub-Saharan Africa and the Paradox of Starvation in Paradise". She echoed the unanimous view of the meeting participants, that "Africa will not attain food security, better nutrition and sustainable agriculture, if the Continent

continues to rely on primitive technologies in her agricultural sector". Participants situated the need for mechanized agriculture on the Continent to the triple challenge of increasing productivity, enhancing resilience in the face of adverse climate change and reducing emissions from some agricultural practices. Furthermore, participants saw agriculture severely compromised by African youth leaving the sector for urban areas. This added to the already existing challenge of skills and capacity gaps in this mainstay sector of African economies. Where some mechanization had taken place, the challenge of non-availability of spare parts for imported machinery was a big frustration to mechanization of agriculture.

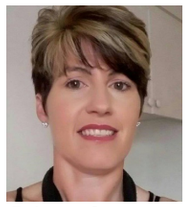
For more information: http://rome.mofa.go.ug/data-dnews-59-SUB-SAHARAN-AFRICA-AND-THE-PARADOX-OF-STARVATION-IN-PARADISE.html

# Influence of biotic and abiotic factors on plant health

In their first article, The positive side of our soils, published in October 2016, Reinette Gouws and Johan Habig elucidate the various micro-organisms that contribute to the overall 'health' and balance of the soil and its ecology. However, as with most things in life, there is a flip side to this coin, and it's not pretty. It usually leaves a diseased crop, economic loss and various unanswered questions. This article focuses on various diseases and how they relate to Conservation Agriculture.

The single biggest management challenge to farmers the world over is that of pests, diseases and weeds (biotic stresses). About one third of crop production is lost to biotic stresses and, on average, their control represents about one fifth of farming costs. Because serious diseases occur regularly, are rapidly disseminated from plant to plant, and are difficult to cure once established in or on a plant, almost all control measures are aimed at preventing plants from becoming diseased, rather than trying to cure them.

Johan Habig

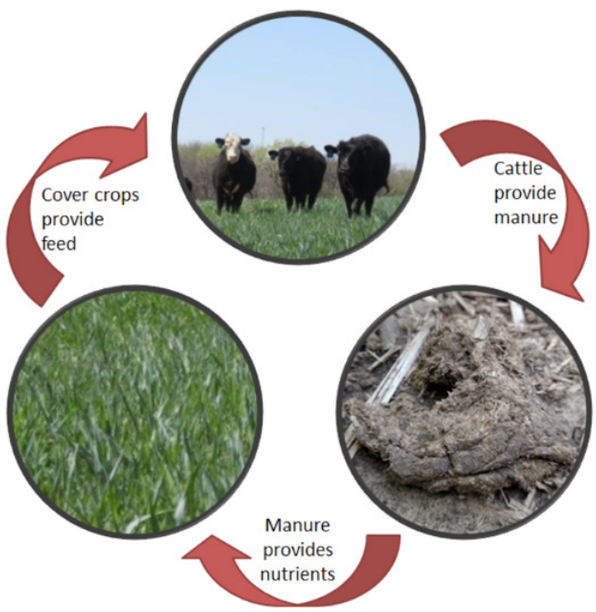


Reinette Gouws

Crop rotation and establishment of cover crops can help in the management of plant diseases by interrupting the infection chain between subsequent crops. When devising a management plan, it is important to use Integrated Pest Management (IPM) technology. IPM is defined as the sustainable control of pests and diseases by combining alternative methods of control in ways that minimize the use of chemical pesticides to reduce economic, health and environmental risks. IPM aims to prevent pests and diseases, to keep pest and pathogen populations low and, ultimately, to promote vigorous but balanced plant growth. We will elaborate on this concept and its application in conservation agriculture in the next issue.

For more information: http://act-africa.org/news.php?com=6&item=377#.WD6EuX3w5kk

# Does grazing of cover crops by cattle compact soil?



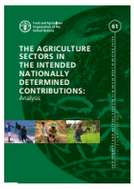

Cover crops provide on farm and environmental services such as suppressing weeds, improved nutrient cycling, decreased soil compaction and decreased erosion, among other benefits. Cover crops may also provide high-quality livestock feed without reducing the delivery of other benefits.

By grazing cover crops, farmers can alleviate grazing stress on existing pastures, allowing them to become more productive. Other benefits of grazing cover crops include reducing feed expenses and decreasing labour required to haul manure and harvest and store additional feedstuffs.

In addition to the economic gains of grazing cover crops, the soil and ecosystem also benefit from having a living cover where the soil would otherwise be left fallow. Cover crops leave abundant root biomass even when grazed, which improves soil properties. Manure from the grazing livestock can add and diversify biological activity and help close the on-farm nutrient cycle. Cattle remove nutrients by eating cover crops, then deposit plant-available nutrients in the form of manure. The following cash crops and cover crops uptake the nutrients, closing the cycle…

For information: https://www.no-tillfarmer.com/articles/6251-weekly#sthash.eiu9yz69.dpuf

# The agriculture sectors in the Intended Nationally Determined Contributions: Analysis - FAO report




This new report from FAO gives a detailed update on the situation of Intended Nationally Determined Contributions (INDCs/NDC) for the 189 countries that have submitted their "plans", as of July 2016. The report summarizes plans by different countries to address the challenge of global warming, particularly by assessing the role of agriculture and land use, land-use change, and forestry and the agriculture sectors (crops, livestock, fisheries and aquaculture, as well as forestry) in meeting national mitigation contributions and adaptation objectives.

The detailed report is available here: http://act-africa.org/image/INDCs.pdf

# Upcoming Events

## 25th National No-Tillage Conference 2017

***Date:*** 10–13 January 2017
***Venue:*** The ***Hilton St. Louis at the Ballpark***

More than 100 cutting-edge, money-making sessions over 4 days, delivering insightful learning and unlimited networking with the best of the no-till community. **Early Bird registration** is open for the 25th annual conference to be held at the **Hilton St. Louis at the Ballpark.** It's just $284 to **registe**r, which is a savings of $85.00 off the onsite rate of $369. Additional farm or family members can also be registered for just $259. This rate will expire August 31, 2016!

## ECHO East Africa Symposium 2017

**Date:** 7–9 February 2017
**Venue:** Naura Springs Hotel, Arusha, Tanzania

The ECHO Symposium will provide a networking and training opportunity for those involved in alleviating hunger and poverty in East Africa. Three mornings of plenary sessions featuring knowledgeable and experienced speakers will be followed by afternoon workshops and discussion groups led by regional agricultural development workers and experts. It will be a valuable time of learning, information sharing and networking for those working and serving in the East Africa Region. Those who register before 1 January 2017 receive a $30 discount!

For more information: https://www.echocommunity.org/en/resources/e3923199-0527-4963-9c82-f33302ee3ed2


## 2nd Agriculture and Climate Change Conference: Climate ready resource use-efficient crops to sustain food and nutritional security

***Date:*** 26–28 March 2017
***Venue:*** Meliá Sitges, Sitges (near Barcelona), Spain

Maintaining crop production to feed the growing population during a period of climate change is the greatest challenge humanity is facing. Increased crop yields during the last century, and especially during the Green Revolution, were brought about by breeding for increased harvests and disease resistance, as well as using more irrigation water and agrochemicals. Improved cultivars were adopted readily during this period of relative climate stability. While genetic gains continue, albeit at reduced rates, productivity is in decline in many regions. Given the multiple challenges in many regions of climate change, reduced water supplies and declining soil fertility, new approaches to produce climate-resilient crops are desperately needed. The ***2nd Agriculture and Climate Change Conference: Climate ready resource use-efficient crops to sustain food and nutritional security*** will focus on the likely impacts of climate change on crop production and explore approaches to maintain and increase crop productivity into the future.

For more information and important dates, link: http://www.agricultureandclimatechange.com/

## 7th World Congress on Conservation Agriculture

The 7th World Congress on Conservation Agriculture, organized by CAAPAS and AAPRESID, will take place 31 July–2nd August 2017. More information on the meeting and the venue in Argentine will be confirmed later.

## Second Africa Congress on Conservation Agriculture (IIACCA)

***Date:*** 2017
***Venue:*** TBC

**For more information, please contact: Executive Secretary | African Conservation Tillage Network**
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Norad

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