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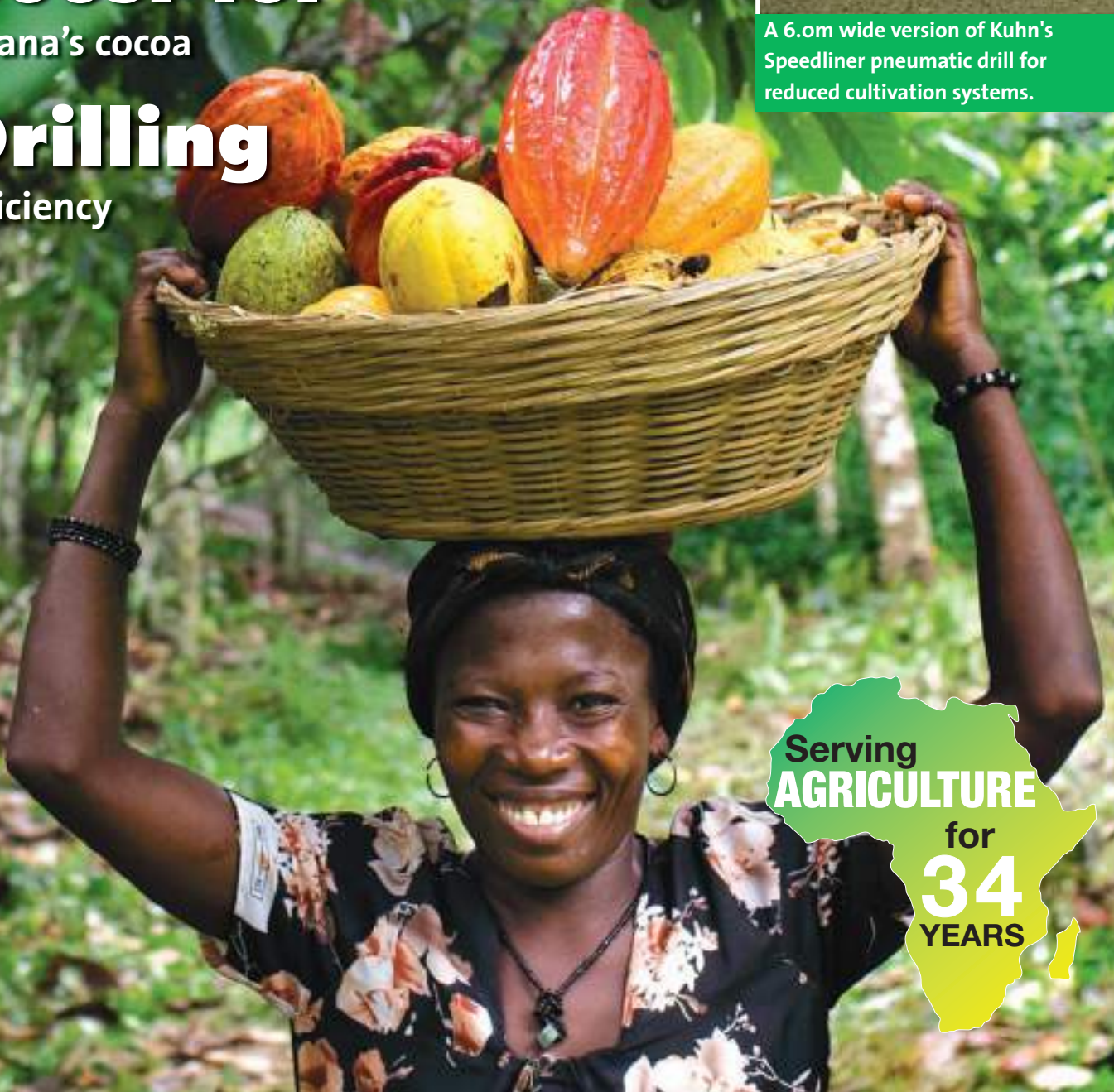
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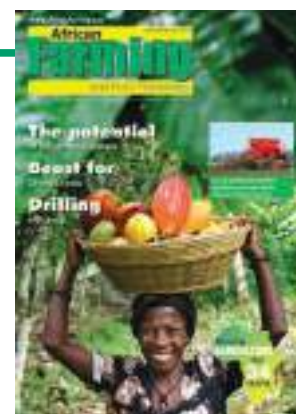
Increased output is among the top priorities for the seed drill manufacturers, helping to reduce costs and to sow more of the crop in optimum soil and weather conditions.

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Cocoa is one of the key crops in Ghana, accounting for more than 20 per cent of total export earnings. Photo: Fjona Hill.



N'dama cattle of West Africa are tolerant to trypanosomes (the cause of trypanosomiasis, or sleeping sickness, and spread by the tsetse fly).



The Explorer, one of the most popular SAME tractors, now has features and breadth of range making it the ideal companion for every farmer looking for a versatile, comfortable and reliable tractor.

					
Managing Editor: Zsa Tebbit					
Editorial and Design team: Bob Adams, Prashanth AP, Sindhuja Balaji, Hiriyti Bairu, Andrew Croft, Thomas Davies, Ranganath GS, Rhonita Patnaik, Prasad Shankarappa, Lee Telot, Louise Waters and Ben Watts					
Publisher: Nick Fordham					
Publishing Director: Pallavi Pandey					
Magazine Sales Manager: Richard Rozelaar Tel: +44 (0) 20 7834 7676. Fax: +44 (0) 20 7973 0076 email: richard.rozelaar@alaincharles.com					
Country	Representative	Telephone	Fax	Email	
China	Ying Mathieson	(86) 10 8472 1899	(86) 10 8472 1900	ying.mathieson@alaincharles.com	
India	Tanmay Mishra	(91) 80 6533361	(91) 80 40600791	tanmay.mishra@alaincharles.com	
Nigeria	Bola Olowo	(234) 8034349299		bola.olowo@alaincharles.com	
Singapore	Tan Kay Hui	(65) 9790 6090	(65) 6280 2823	tankayhui@tankayhuiimedia.com	
South Africa	Annabel Marx	(27) 218519017	(27) 46 624 5931	annabel.marx@alaincharles.com	
UAE	Camilla Capece	(971) 4 4489260	(971) 4 4489261	camilla.capece@alaincharles.com	
USA	Michael Tomashefsky	(1) 203 226 2882	(1) 203 226 7447	michael.tomashefsky@alaincharles.com	
Head Office: Alain Charles Publishing Ltd University House 11-13 Lower Grosvenor Place London SW1W 0EX, United Kingdom Telephone: +44 (0) 20 7834 7676 Fax: +44 (0) 20 7973 0076 E-mail: post@alaincharles.com					
Middle East Regional Office: Alain Charles Middle East FZ-LLC Office 215, Loft 2A PO Box 502207 Dubai Media City, UAE Telephone: +971 4 448 9260 Fax: +971 4 448 9261 E-mail: post@alaincharles.com					
Production: Nikitha Jain, Nathanielle Kumar, Donatella Moranelli, Rachel Neeson and Sophia White E-mail: production@alaincharles.com					
Subscriptions: circulation@alaincharles.com					
Chairman: Derek Fordham					
Printed by: Buxton Press					
US Mailing Agent: African Farming & Food Processing USPS. No. 015-224 is published six times a year for US\$90 per year by Alain Charles Publishing Ltd, University House, 11-13 Lower Grosvenor Place, London, SW1W 0EX, UK Periodicals Postage Paid at Rahway, NJ. Postmaster: send address corrections to: Alain Charles Publishing Ltd, c/o Mercury Airfreight International Ltd, 365 Blair Road, Avenel, NJ 07001. ISSN: 0266 8017					
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Farming Calendar 2015

FEBRUARY

22-26	SIMA en.simaonline.com	PARIS
25-28	Sudan Poultry Expo www.expoteams.com	KHARTOUM

MARCH

9-11	Global Forum for Innovations in Agriculture www.innovationsinagriculture.com	ABU DHABI
11-13	Viv Asia www.vivasia.nl	BANGKOK
22-25	AgriBusiness Forum www.emrc.be	KINSHASA
25-27	Hortiflora Expo hppexhibitions.com	ADDIS ABABA

APRIL

14-16	AGRIEXPO 2015 www.agriexpo.com	LAGOS
17-18	Agritech Expo www.agritech-expo.com	CHISAMBA

MAY

12-15	NAMPO Harvest Day www.grainsa.co.za	BOTHAVILLE
14-17	SIPSA 2015 www.sipsa-dz.net	ALGIERS
28-30	AGRENA 2015 www.agrena.net	CAIRO

Agritech Expo - leading show in Zambia

THE AGRITECH EXPO Zambia is a long-time dream of the Zambian National Farmers Union. Working in close collaboration with ZNFU and MUSIKA, this interactive, high profile and unique event will be one of the industry's leading agricultural shows in the region.

In 2014 Agritech Expo was a first-of-its-kind outdoor agricultural exhibition in Zambia. With ambitious growth plans in place for 2015, Agritech Expo is projected to have in excess of 120 exhibitions and 10,000 visitors.

The event will be the first port of call for senior decision makers from government, commercial farms, agricultural and regional organisations and associations, agro-processors as well as donors/investors, who will be at the event sourcing the latest solutions and technologies to meet the needs of their organisations.

8th Sudan Poultry Expo

SUDAN POULTRY EXPO is a major specialised event dedicated to the development of poultry, livestock and agricultural production in Sudan, with animal numbers exceeding 140mn cattle, one of the largest in Africa and the Middle East.

This 8th session will witness a dramatic change in exhibitors and visitors due to the constant development of the event and rapid development and leap frog growth of the poultry industry in Sudan, which has led to a doubling in stands sold at SPE for this session.

With its spacious halls and spectacular gardens Khartoum International Fair Ground offers a wide range of services to organisers, exhibitors and visitors and it is considered as one of the leading venues in Africa and the Middle East.

HE Professor El Sadig Omara, former state minister at the federal ministry of agriculture and forestry is the guest speaker at the symposium "Investment Opportunities in Sudan" (Focus on Poultry Industry) and many other scientific symposia which will coincide with SPE.

FierAvicola - Italy's leading trade show for the poultry sector

THE NEW EDITION of FierAvicola, the traditional Italian meeting dedicated to the international poultry world, will take place in Forlì 15-17 April. Its aim is to present and enhance the worldwide excellences of the field, pointing out the quality of the whole productive process up to the end product.

At its 49th edition, with over 300 exhibitors, more than 30 per cent from overseas, and an exhibition area covering over 20,000 sq m, FierAvicola once again confirms its place as Italy's leading trade show and one of Europe's most high-profile B2B events for the poultry sector - an ideal meeting place selected by the poultry industry experts, to value



innovation, quality and competitiveness.

Displaying and enhancing all the exhibiting categories related to the poultry market (from genetics up to the end processed product, passing through all the products, equipment and technology necessary in a farm as well as in the food processing industry), FierAvicola continues to play the role of shop window for furthering international professional and business relations.

The synergy with the specialised press and the main poultry and livestock exhibitions, the tour across the most thriving foreign markets in order to strengthen relations with the biggest poultry companies in Europe, northern and Central Africa and the Middle East, along with the ongoing co-operation with the institutions dedicated to international development, are just a few of the strong points consolidating the strategy of worldwide development in 2015's edition.

The worldwide development programme is not only committed to inviting buyers' delegations during the show, but it is structured as a complete service, able to increase real and effective contacts between exhibitors and markets, through tools dedicated to internationalisation, as in-depth analysis on specific market's trends, relations with local key players and decision makers, solutions to customs, financial and cultural issues faced by the operator while going abroad.

An equipped international lounge will be entirely dedicated to foreign visitors for the meetings with the exhibiting companies of interest and the international exhibiting area will see the presence of the main exhibitions worldwide and the most relevant specialised press.

Last but not least, the event will be enriched with a valuable programme of technical, scientific and business conferences, based on up-to-date themes, relevant worldwide.

Zimbabwe honey bee conference

THE ZIMBABWE EZEKIEL Guti University (ZEGU) and the Bee Keepers Association of Zimbabwe Trust (BKAZT) will host the first International Research conference on the 28-29 July 2015, African Honeybee and Indigenous Knowledge Systems in Bindura, according to Chaipa Mutandwa, co-ordinator for BKAZT.

"African honey bee keeping undoubtedly has the potential to improve the livelihoods of people if the benefits are understood and harnessed appropriately. Research on colony management, queen breeding, health, diseases, apitherapy and use of indigenous knowledge systems can empower a number of bee keepers in Africa and enable them to maximise on the potential of apiculture in their regions. The identified gaps in quality assurance, fair trade and certification can be bridged as more research is undertaken and people empowered to sustainably keep the honey bee," Mutandwa said.

Mutandwa added that the conference seeks to pool together researchers, service providers, indigenous people, buyers, bee keepers, NGO's, private sector representatives, government ministries and academia to contribute in exhibitions and round-table discussions on issues affecting this industry particularly in southern Africa. It also seeks to further develop the current knowledge and research on African honeybee keeping.

The objectives of the conference are to: disseminate and widen research on honeybee keeping, promote national and international linkages and networks among the bee-keepers, research institutions, service providers and buyers of bee and hive products, promote co-operation on research of the African honey bee and to harness and understand the indigenous knowledge systems of bee keeping in Africa.

The conference theme is: 'African honey bee research, indigenous knowledge systems and the future.'

Mutandwa added that the conference will address six sub-themes from which authors can choose topics to focus their abstracts on:

- Research, knowledge and the challenges of bee keeping,
- Indigenous Knowledge Systems (IKS), use and benefits for bee keeping;
- African Honeybee for economic and sustainable development;
- Fair trading, certification and quality assurance of honey and bee products;
- Bee diseases, health and Apitherapy and
- Stingless bees and their potential.

Wallace Mawire

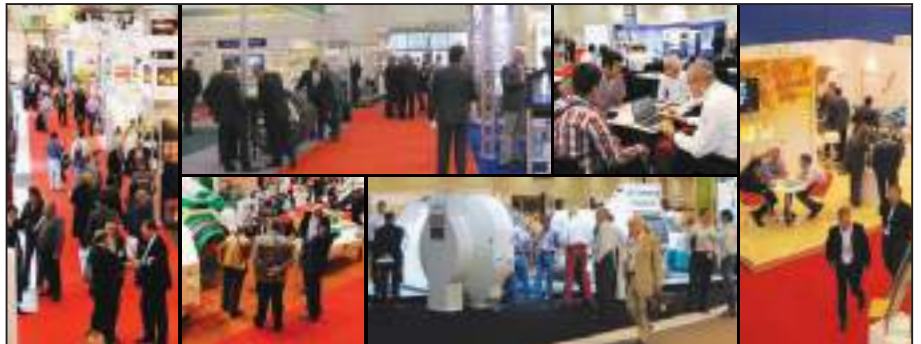
Ghanaian farmers to benefit from US\$50mn Mastercard fund

CANADA-BASED MASTERCARD Foundation has announced it will provide a US\$50mn fund to help improve the lives of smallholder farmers in Ghana by enabling agricultural businesses to extend financial services in the country.

Roger Morier, senior communications manager at MasterCard Foundation, said that the goal of the fund was to transform lives by increasing access to financial services for at least one million financially excluded people living in rural and agricultural areas of Ghana.

MasterCard Foundation aims to do so by supporting financial service providers or institutions with a financial solution to develop new or expand existing financial products, services or delivery platforms that will increase financial access for people living in poverty, rural or agricultural areas, Morier added.

Reeta Roy, CEO of MasterCard Foundation, noted, "Over the last decade, many countries in sub-Saharan Africa have enjoyed substantial economic growth but much of this growth has not benefited the rural poor, especially smallholder farmers who are mostly women and who depend on subsistence agriculture for their livelihoods.



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For further information please contact:

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How farmers can reap benefits of ICT

FARMERS IN NIGERIA are being encouraged to make more use of farm applications and other forms of ICT that can increase the knowledge available for making sound, profitable farming decisions, according to Dr Ademola Adeyemo, deputy director, department of general administration, Agricultural and Rural Management Training Institute (ARMTI) in Ilorin. According to Adeyemo, such

technology will not only add value but help farmers get information they need to improve their business. Adeyemo said deploying technologies in agriculture will attract young people to take up farming as a business.

He said encouraging the use of ICT in agriculture will make farming a more attractive career option and urged the government to motivate young people to

play more roles in the development of agriculture. This, he added, requires encouraging young Nigerians to use new technologies that are far removed from the old image of farming from them.

To this end, he said a great deal of attention need to be given to integrating technology into day-to-day farming practices calling for collaboration between the universities and the farmers to make it work.

Growing demand for food requires a boost in agricultural production

THE WORLD IS demanding more from farms. According to FAO's latest projections, by 2050 the world needs to produce 60 per cent more food to feed a population that is expected to rise above nine billion.

"This evolution represents tremendous challenges and opportunities for the Middle East and Africa, which is the world's most developing market for the agricultural business," said Marco Raimondo, Case IH's new business director for Africa and the Middle East. This recent appointment is part of the undergoing evolution of the brand that follows the creation of parent company CNH Industrial NV in September 2013. "The pursuit of higher productivity and the slow but steady transition from subsistence farming to diversified agriculture are driving the growth of the agricultural equipment sector in our region, as confirmed by the positive results we achieved in 2014," added Raimondo.

Since its foundation in 1842 in Racine (USA), Case IH has been at the forefront of the mechanisation process and a key contributor to the transformation of agriculture, gaining a worldwide leadership in the agricultural equipment industry.

"Case IH has very strong positions in South Africa and in other countries such as Algeria, Kenya, Mozambique and Zimbabwe," he pointed out.



Case IH Austoft 8800 sugar cane harvesters and a Puma 240 tractor during harvesting operations.

Speaking about the company's future plans within the region, Raimondo observed: "We intend to further strengthen our company's position as a full liner of agricultural equipment with new product launches in 2015."

"On the tractors side, units below 100 horsepower still represent the most important segment in terms of volumes but there are growing trends for big tractors too," said Raimondo.

Afreximbank provides US\$350mn for cocoa processing in Africa

THE AFRICAN EXPORT-IMPORT Bank (Afrieximbank) has provided about US\$350mn to finance cocoa processing activities in the four major cocoa producing countries in Africa.

The four major producers are Côte d'Ivoire, Ghana, Nigeria and Cameroon.

According to Afrieximbank's president, Jean-Louis Ekra, the bank also has a pipeline of another US\$400mn to help develop the cocoa processing industry in Africa.

"The bank has launched its Africa Cocoa Initiative. Afrieximbank has provided about US\$350mn in financing to support cocoa processing activities in the four major cocoa producing countries in Africa," he said in a statement availed to the media in Lusaka recently.

Ekra said this at the bank's headquarters in Cairo, Egypt, recently during the signing of a memorandum of understanding (MoU) between Afrieximbank and the International Cocoa Organisation (ICCO) aimed at boosting the development of the African cocoa



sector and cocoa-related business.

Afrieximbank is committed to help achieve greater involvement of Africa in the global cocoa value chain, increasing cocoa consumption in Africa, and diversifying the continent's cocoa export markets.

The bank will also help African countries improve productivity and income levels for cocoa farmers.

Speaking earlier, ICCO executive director, Jean-Marc Anga welcomed the opportunity to collaborate with Afrieximbank, saying there was a need for a strong focus on supporting indigenous African businesses to play an active

role in the processing of Africa's cocoa.

Under the terms of the MoU, the two organisations are expected to collaborate to develop activities, secure funding and jointly implement activities and projects towards sustainability in the production and trade of cocoa.

"The initial focus will be on the development and implementation of solutions to improve the structural conditions of cocoa markets and to enhance the long-term competitiveness of smallholder cocoa farms and of local cocoa and chocolate products industry to reinforce their capacity to participate in global trade," he said.

Afrieximbank was formed in 1993 as a mechanism to assist African companies reach global markets with their goods and services. It is headquartered in Cairo, Egypt.

ICCO is a global organisation, composed of both cocoa producing and cocoa consuming countries.

Nawa Mutumweno

ORO AGRI launches new packs in Africa

SMALL-SCALE FARMING is a major part of the African agricultural market and it is imperative that crop protection products are easily accessible to these growers.

Small-scale or subsistence growers often do not have the financial resources, transport facilities or even proper storage facilities to buy large quantities of pesticides at once. To address these issues, Cape Town-based Oro Agri SA (Pty) Ltd, has recently launched a new 200 ml pack for its environmentally friendly products. This pack has been developed to allow small-scale growers to mix four to five backpacks from one bottle (depending on the backpack size).

"We have launched this new pack size to provide a product that is affordable, user-friendly, robust and able to withstand being transported in a basket on the back of a bicycle without breaking," explained Johan Coetzee, general manager, sub-Saharan Africa.

"While every effort was made to find a suitable bottle in South Africa, we were eventually able to utilise the global footprint of ORO AGRI to source a bottle meeting our exact requirements. As well as the bottle itself we have also introduced a special booklet label system which allows the user to read the directions for use without having to remove the label from the container. This is a

feature which we regard as very important to prevent contamination and other risks associated with the incorrect use of pesticides."

"Our range of products can be used on a wide range of crops leaving no chemical residues and therefore they have no pre-harvest interval which is ideal for small-scale growers," said Johan. "In tomatoes, for example, where the crop is harvested over a long period, the products can still be used in between harvesting to prevent crop loss or plant damage due to insect pests, where the use of traditional pesticides would be limited. Small-scale growers – just like many commercial growers around the world – will find that these products have the potential to significantly reduce the grower's dependence on traditional chemicals. They can now effectively control various insect or mite pests and certain diseases right up to harvest, while at the same time providing crops that are safe for consumption."

The company is currently expanding its business into sub-Saharan Africa and is already selling a range of environmentally friendly crop protection products in South Africa, Namibia, Botswana, Zimbabwe, Malawi and Ethiopia. Registrations have also been submitted for some West African countries, as well as Mozambique, Zambia and Kenya.

Zambia records highest winter wheat production

FARMERS IN ZAMBIA will have harvested 338,233 tonnes of wheat in 2014, the country's highest production ever, latest statistics indicate.

According to the Zambia National Farmers Union (ZNFU), final 2014 winter crop inventory results through satellite imagery show that Zambia planted a total of 44,619 ha of wheat, yielding a total output of 338,233 metric tonnes of the cereal.

The figures also mean that Zambia could consolidate its position as the food basket in the region, more especially that Zimbabwe, southern Africa's former food basket, saw its winter wheat production this year dropping by as much as 29 per cent to 10,000 metric tonnes as structural changes affecting viability of the cereal's production persist.

Zimbabwe's Commercial Farmers Union said the country would fail to meet last year's production levels of 14,000 metric tonnes as the planted area will significantly decline.

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Agricultural revolution is the only hope for Nigeria's food security

OVER THE PAST four years, the agricultural sector has been boosted and the perception has changed - that it is not just as a means of livelihood, but more as a business.

The distribution of fertilisers has been a racketeering business for some groups for many years. As a way of curbing the racketeering syndicate in the distribution of fertilisers, the minister of agricultural and rural development, Dr Akinwumi Adesina, said the introduction of Nigeria Incentive-Based Risk Sharing Systems

for Agricultural Lending (NIRSAL) by the Central Bank of Nigeria (CBN) has de-risked lending to the agricultural sector.

According to the minister, under the GES, 4.2mn farmers have received seeds and fertiliser in the 2013 farming season, adding that about 20mn people have been impacted through the GES initiative. Adesina said banks lent N3.5bn (US\$18,200mn) to seed and fertiliser companies in 2012 under the GES, and this has increased to more than N20bn (US\$104,000mn) in 2013.

With this remarkable feat, Nigeria has reduced its food imports by more than 40 per cent as of 2013, moving the country closer to self sufficiency in agriculture.

Nigeria is the world's largest producer of cassava with an output of over 45mn metric tonnes in 2014, according to the FAO. The transformation from rustic farming to mechanised agriculture which requires empowering local farmers to adopt modern and cost-effective technologies is now vigorously pursued.

AGCO's fourth Africa Summit focuses on partnering for growth

AGCO, A GLOBAL leader in the design, manufacture and distribution of agricultural machinery and solutions, recently held its fourth annual AGCO Africa Summit in Berlin. The summit is a joint initiative of AGCO, Bayer CropScience, DEG - Deutsche Investitions- und Entwicklungsgesellschaft and Rabobank.

"Africa represents an important future growth market for AGCO and we are putting sustainable mechanization at the core of our strategic investments"

This year's Summit focused on how we can all become better partners for Africa as well as highlighting Africa's agricultural advancements driven by the private sector - promoting the idea of agriculture as a business and not just a development agenda. "Ensuring food security is the top priority for many African Governments who struggle to afford imported food for their rapidly growing populations while significant amounts of their arable land is not used," said Martin Richenhagen, chairman, president and CEO of AGCO. "Developing strong partnerships across the value chain will be critical in achieving this goal and we each have an important role to play - governments, the private sector and development agencies. AGCO's focus is on promoting sustainable mechanisation in Africa."

A key aspect of AGCO's Africa strategy is focused on advancing farming know-how and improving its distribution network through initiatives like the 'Future Farm Concept' which was showcased at this year's AGCO Africa Summit. The Future Farm will give local farmers and AGCO dealers hands-on training experience and exposure to leading edge agriculture through a new state-of-the-art mechanisation centre, a poultry learning centre and a grain handling centre, each a first of its kind for Africa. The Future Farm in Zambia is now fully operational and the grand opening will take place in May 2015. AGCO plans to expand the Future Farm Concept in other key markets in Africa, initially focussing on Francophone Africa. "Africa represents an important future growth market for AGCO and we are putting



Rob Smith, AGCO's senior VP and general manager, Europe, Africa and Middle East; H E Joaquim Alberto Chissano, former president of Mozambique; Christian Schmidt, federal minister of food and agriculture, Germany; H E Sir Quett Ketumile Joni Masire, former president of Botswana and Martin Richenhagen, AGCO CEO at the AGCO Africa Summit 2015. (Photo: Business Wire)

sustainable mechanisation at the core of our strategic investments," said Rob Smith, senior VP and general manager, Europe, Africa and Middle East. In May 2014, AGCO launched the new Global Series Tractor in Africa, the result of AGCO's largest ever product investment. In 2012, AGCO set up Algerian Tractor Company (ATC) with the Algerian Government, through L'Entreprise Publique Economique de Production de Tracteurs Agricoles (ETRAG) and L'Entreprise Publique Economique de Commercialisation de Matériels Agricoles (PMAT). Dr Smith explained, "For AGCO, 'sustainable mechanisation' means designing our products for the African market environment and building them locally. It also means providing professional training for operating, maintaining and servicing our machines, and first class support through our extensive dealer network and parts supply in Africa."

ZCF to establish milling plants

THE ZAMBIA CO-OPERATIVE Federation (ZCF) will this year set up milling plants in four districts in the country at a cost of about US\$10mn through a loan from the Development Bank of Zambia (DBZ) to stabilise mealie-meal prices in the country.

According to ZCF's director general, James Chirwa, milling has been identified as a potential business in the rural areas, namely Mbala, Kalomo, Lundazi and Mumbwa or Mpika in the value addition chains to put up a milling plant in the respective districts.

The project has been linked with ongoing road

infrastructure development to enhance access to the areas.

"This year, we should be putting up at least four milling plants at about US\$10mn from a DBZ loan. This is aimed at mitigating the high prices of mealie-meal currently in the country," Chirwa said recently.

Each milling plant will cost roughly US\$2.1mn to construct and will have a production capacity of about 60,000 of 25-kg bags per month.

The construction of the milling plants will comprise warehouses and storage facilities for both raw

and finished products.

ZCF is also looking at other sources of funding to increase milling plants to at least six.

"About 22 districts have so far been picked, but ZCF will start with those in the highest maize producing provinces, namely Southern, Eastern, and Northern," he pointed out.

Currently, the price of mealie-meal, the country's staple food is high despite Zambia recording consecutive maize bumper harvests.

Nawa Mutumweno



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A properly designed and correctly constructed poultry house provides the required level environmental control for birds to live and grow in comfortable, hygienic and well-ventilated and illuminated conditions. With this achieved, birds are protected from direct sunlight, rain, draughts, extremes and sudden changes in temperature, as well as gases and fumes including carbon dioxide and ammonia from manure and soiled litter.

Overhead costs should be low and no more than 15 per cent of total production costs. Design and construction should take into account the need for multi-purpose use — adaptations for brooding, rearing and egg laying, but on no account should birds of different ages be raised simultaneously under one roof.

Site and location

The next big step is the location of the house, which must be accessible via a good all-weather road so that inputs can be brought in and produce taken out. Reliable sources of clean piped water and electricity are essential. Drainage should be considered



It is not a good idea to locate poultry houses near to dense natural vegetation or crops like sugar cane and cocoa, which may harbour rodents.



Poultry house layout in relation to the entire farm and other individual buildings and their functions must be taken into consideration.

from the point of view of poultry health, including the disposal of poultry waste.

The selected site should benefit from air movements and to this end, wind speeds and directions should be studied over a period of time, a whole year if possible, so that the house receives the most favourable orientation to the prevailing winds.

Farmers should avoid sites that are prone to water-logging, which have air movements obstructed by natural barriers or other farm buildings. They should consider direction of sunlight, rainfall and cold draughts and relate these factors to wind speed and direction especially during cool and rainy seasons. Always site the house so that the long walls orientate towards the least direct sunlight.

Poultry house layout in relation to the entire farm and other individual buildings and their function is another important consideration. Design plans must ensure that wind direction, water drainage and work routine moves from buildings holding younger stock to buildings holding older stock.

Surrounding vegetation

Always locate the house well away from concentrated blocks of tall plantation tree crops like rubber and other buildings so there is no interference with natural air flow onto and through the poultry house.

Tall trees with bare trunks, foliage restricted to tree crowns near to the house can provide good shading benefits without interfering with the flow of air. But small bushy trees and shrubs like citrus and mango have an overall negative effect because they are not tall enough to provide shade but will still interrupt air flow.

Appropriately sited trees and other vegetation may complement cooling of the house through transpiration of water from the leaves by taking heat from the immediate environment for evaporation. Indeed air movements across transpiring crops in hot climates can reduce ambient air temperature by up to three degrees celsius.

In hot dry areas, poultry house location near crops including pasture under irrigation can bring considerable rewards. Furthermore, a poultry house that is completely surrounded by grassland or alternative low-profile cover crops like alfalfa, groundnuts, cowpea (vigna) or cucurbits (such as cucumber, pumpkin or musk melon) will benefit from the absorption of solar radiation by the foliage.

It is not a good idea to locate poultry houses near to dense natural vegetation or crops like sugar cane and cocoa, all of which may harbour rodent predators like rats. If raising ducks always reserve an area outside of the house, occupying an

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equivalent to half the house area, to construct a pond of shallow water which need be no more than 30cm deep. With this supplied ducks can often withstand high ambient temperatures that will otherwise cause high mortality in chickens and turkeys. Clearly there are no hard and fast rules but more a question of 'mix and match' to suit.

Building the house

On a per bird basis, the cost of building a house decreases with the size of house so producers are advised, if financially possible, to include any future expansion plans in the initial construction.

Foundations and floor

The required depth of the foundations is determined by the physical condition of the ground and soil and the weight that has to be borne. In locations that experience high winds, a depth of at least 0.4 metres is required. The foundation hole should be large enough for one man to work in comfortably (up to 0.6 metres wide). For a foundation depth of 0.4 metres, 0.2 metres depth of concrete (lime or cement) is required. Foundation walls should be built to 0.2 metres thickness and brought up to 0.15 metres above ground level with 0.1 metre left on each side. In all cases they must be constructed from cement, stones and other termite resistant material.

Concrete is advised for the floor so that it provides a rodent-proof surface that can be washed down and disinfected. Floor level should be at least 0.20 metres above ground level with up eight cm to 10cm of high quality concrete laid on a carefully prepared and solid base. Bricks laid on an equally solid base and cemented together offer a cheaper and satisfactory alternative. A concrete floor is essential for deep litter systems. This is particularly important if the soil is clayey and able to absorb moisture from the sub soil, because the dampness



Producers looking for a cheap alternative may be able to keep commercial broilers, layers or breeders on dirt floors of a sandy, porous nature.

will ultimately be transferred to the surface of the soil, by capillary action, and be absorbed by the litter.

Producers looking for a cheap alternative may be able to keep commercial broilers, layers or breeders on dirt floors of a sandy, porous nature, although the floor should be rammed tight with a hard material and be at least 0.3 metres above the surrounding ground level.

Dimensions

Widths of open-sided houses should ideally be between 8-10 metres while those in excess of 10 metres will invariably cause problems during hot seasons with insufficient natural ventilation to keep the birds out of heat stress situations.

The length of the house is more versatile. It may be any length the producer chooses although in practical terms length is determined by the 'lay of the land' on which it is to be built. Uneven land requires grading and levelling, a labour-intensive and relatively expensive component of the building programme. The length of the house will also be constrained by the adoption and installation of automatic

feeding and watering equipment. For this reason, producers who opt for such equipment should have detailed discussions with manufacturers beforehand to determine the limitations, if any, on house dimensions.

Open sided houses will typically have stud supports that measure 2.5 metres from the foundations to the roof, increased to three metres in areas that experience very high temperatures. Side-walls are typically 10cm to 12cm thick (the width of a single, standard concrete block) and built to a height of 0.5-0.6 metres with pillars (0.3 square metres) on top, at 1.2 metres intervals, to secure wire netting frames. Frames are approximately 1.2 metres tall with hexagonal wire netting slotted into and secured to a timber frame. End walls are built of solid brick with doors at each end.

The roof

Thatch, though cheap, is neither fireproof nor bird/rodent proof and is, therefore, not recommended. Suitable alternatives include clay tiles on a wooden support structure. Gable roofs with ridge openings to provide good ventilation are ideal in hot climates. A generous overhang of up to one metre is advised to protect the interior of the house from heavy driving rainfall and to offer shade and comfort for the flock.

Other commonly used roofing materials include corrugated, galvanised iron sheets or aluminium sheets. The tendency for corrugated iron roofs to raise the inside temperature of the house to uncomfortable levels during hot seasons can be avoided by the judicious planting of shade trees. Aluminium sheeting, though more costly, does not cause this problem. Installation of false ceilings and treating the roof with white paint to reflect heat are relatively cheap ways of maintaining house temperatures at equitable levels.

Terry Mabbett



A generous overhang of up to one metre is advised to protect the interior of the house from heavy driving rainfall and to offer shade and comfort for the flock.

Hatchery vaccine effective against H5N1

A RECENT EGYPTIAN study by Dr Walid Kilany published in Avian Pathology confirmed that a single hatchery vaccination using rHVT-AI vector vaccine can be an effective tool to address H5N1 prevention and control in endemic countries.

The research also found that the immunisation by-passed maternally derived antibody (MDA) resistance to the vaccine. Furthermore, it noted that a single dose given in the hatchery delivered up to 19 weeks of protection and was far more cost-effective and efficient than existing vaccination systems, which cannot be applied until week four and require boosters during the chicken's lifetime.

The AI vector vaccine is suitable for layers, broilers and breeders. It has been developed by Ceva 'using contemporary science and novel technology which has been applied to a 50-year-old proven frozen Marek's vaccine (HVT)'.

Moreover, the application of the vaccine within the controlled environment of a hatchery when the chick is one day old, means that they are protected earlier in their lives, are at significantly less risk of infection during their lives and will live healthily and productively to provide safe proteins (eggs and meat) to consumers.

Ceva stated, "Vectormune AI's protection has been evaluated against about 13 different strains of the AI virus (H5N1), isolated from around the world belonging to different categories of strains of this rapidly spreading and fast mutating virus. Its efficacy is well proven ensuring a survival rate of between 80 and 100 per cent of flocks within the test, no matter the provenance of the AI strain. Once inoculated, the vaccine remains in the chick."

H5 avian influenza returns to Nigeria

A HIGHLY PATHOGENIC form of avian influenza has been confirmed in Nigeria. The outbreak marks the first time the virus has shown up in the country since July 2008.

According to a report from the World Organisation for Animal Health (OIE), a



strain of H5 avian influenza was discovered in a backyard flock in Kano, Nigeria. Tests conducted on 8 January by the National Veterinary Research Institute proved positive for the virus.

The birds in the flock affected by H5 avian influenza included 22-week-old layers, 10-week-old growers and four-week-old broilers. A total of 1,568 chickens were susceptible, with 1,370 of the birds dying from avian influenza. The remaining 198 susceptible chickens were slaughtered, according to the OIE report.

The source of the avian influenza outbreak has not yet been determined.

Protective measures conducted by animal health specialists included establishing a quarantine zone and disinfecting the affected premises.

Avian influenza cases have been widespread in recent months, causing concerns for members of the global poultry industry. Since mid-2014 avian influenza outbreaks have been confirmed in the Netherlands, Germany, UK, Japan, Italy, India, Canada and the United States.

The OIE stated that it will submit weekly follow-up reports on the Nigerian avian influenza outbreak.

Namibian poultry project improves lives of community

NAMIBIAN VETERAN POULTRY poultry farmer, Eric Campbell, has launched a micro-project for the production of chickens and eggs in Omama, a small settlement located in the Rehoboth Rural Constituency in the Hardap region.



Campbell initially started the project at his home with only 200

Namibian poultry farmer Eric Campbell sells chickens to the Omama community at N\$15 each.

Australian Astrocompass layers, until the project expanded and Campbell decided to reduce dependence on imported layers by producing his own chickens. The poultry farmer designed a makeshift incubator from an old refrigerator to induce the eggs to hatch faster.

"After their production lifespan, we sell the chickens to the community at N\$15 (US\$1.3) each to recoup costs."

According to Campbell, one of the biggest problems with chicken farming is the supply of layers which are often imported from South Africa at a high price.

"The availability of chickens is a problem because we mostly have to get them from South Africa and very often they are not enough to meet the demand. We need decent incubators for fertilisers. Why always go to South Africa for simple things like layers, when we can make our own incubators and rear our own chickens," he said.

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Ilinova is an ACP science and technology programme aimed at fostering indigenous livestock (IL) use in Eastern, Southern and Western Africa in ways that will preserve and strengthen genetic lines. Tim Guest reports.

Powerful genetic traits - the potential of indigenous livestock

MOST LIVESTOCK IN many African countries are kept and managed under small holding conditions in low-input agricultural regimes. From village poultry farming in Madagascar to Nubian goats kept for milk in North Africa, such widespread scenarios remain a kind of comfort zone and highlight a lack of knowledge and understanding on the parts of various stakeholders - farmers, local communities, local and regional organisations and officials involved in the agricultural sector - of the innovative livestock technologies available elsewhere in agriculture. As a consequence, opportunities to strengthen the genetic lines of indigenous livestock (IL) and animal breeds are being lost resulting in genetic erosion and poor performance of IL, in turn leading to farmers, their families and communities remaining in poverty. What these players in the livestock stakes don't realise - and this is not necessarily any fault of their own, just circumstances - is that IL is a potential, crucial repository of locally- and regionally-relevant genetic diversity that, by using the very latest innovative genetic engineering technologies and animal husbandry techniques, could be enhanced and leveraged to deliver greater productivity in their agricultural regimes and help them grow economically.

Opportunities to strengthen the genetic lines of indigenous livestock (IL) and animal breeds are being lost resulting in genetic erosion and poor performance of IL.

Egerton University in Kenya is at the heart of the ACP (African, Caribbean and Pacific Group of States) Ilinova programme, which is aimed at improving, through education, IL management across Africa. The university is heading up the building of a Livestock Innovation and Business Centre as part of



Vaccination of an indigenous chicken.

its involvement, which will help to encourage increased co-operation between industry and the academic research side of IL management.

The centre is being established in Kenya along with offices in Malawi and Nigeria and will also host a Livestock Innovation and Business Network aimed at strengthening scientific capacity and bringing together the different players in the livestock value chain to foster co-operation and encourage adoption of the results of the programme. The centre will also act to support respective African governments so that knowledge gaps can be filled and existing scientific capacity bolstered in order to manage IL more effectively.

At the end of 2012, African Farming magazine took a close look at village poultry farming in Madagascar where one of the major challenges faced by communities and small holders was the scourge of Newcastle Disease (ND) among their flocks. Vaccination and how to protect against the disease is just part of the programme at Egerton and is carried out by students as part of their courses. Similar activities take place for other livestock and other diseases. Artificial insemination, including the semen

extraction process, is also an innovative reproductive technology that is used to enhance the productivity of a range of livestock, including chickens and goats, as part of the Egerton University IL programme.

The great challenge that Ilinova has highlighted is that current strategies to increase production and livestock populations are failing and without more innovative livestock technologies (ILT) productivity will continue to diminish. With growing human populations wherever you turn this conundrum is a perfect recipe for increased local and regional food insecurity and, ultimately, socioeconomic disaster.

Ilinova to the rescue

All is not gloom and doom, however. The Ilinova team is waking the right people up to the problem and potential solutions and working towards establishing effective and proactive research-industry-civil community tie-ups. These will, to begin with, encourage the sustainable use, development and conservation of IL in Kenya, Malawi and Nigeria, through agricultural innovation and efficient IL management, in turn leading to the ability for livestock farmers to compete on a larger commercial stage and emerge

from poverty, as well as underpinning food security in those regions, where both remain big problems. In addition, IL appear to be well adapted to present conditions and environments in the three regions, but still exhibit poor production performance, so with the right management and new techniques some of the stage is already set for potential for productivity improvements.

ILinova itself states that: 'Low genetic potential is the most quoted constraint to IL production that has influenced their sustainable use. The sustainable use, development and conservation of IL should be realised in a participatory context and will require the support and participation of farmers, pastoralists and breeders, local and indigenous communities, research organisations and public institutions, the private sector, and the civil society. The Global Plan of Action for Animal Genetic Resources (GPA) of the Food and Agriculture Organization of the United Nations (FAO) provides a framework for enhancing management programmes through the strengthening of policies, institutions and capacities.'

If IL use is to remain economically viable, genetic improvement strategies are required.

Programme breeding strategies

IL presents wide genetic diversity. As a result, a range of potentially advantageous traits are typically expressed among the animals and present the opportunity to choose the 'best of breed' suited to a particular scenario. Such traits as adaptability to harsh environments, disease tolerance and/or resistance, are the most valuable within IL herds and flocks, but are traits that are not present in exotic or non-



N'dama cattle of West Africa, for example, are tolerant to trypanosomes (the cause of trypanosomiasis, or sleeping sickness, and spread by the tsetse fly).

indigenous livestock. N'dama cattle of West Africa, for example, are tolerant to trypanosomes (the cause of trypanosomiasis, or sleeping sickness, and spread by the tsetse fly), and the Red Maasai sheep of East Africa exhibit high levels of resistance to gastrointestinal worms. But such breeds and traits are all too often ignored because of misconceptions as to their value, simply because they exhibit low productivity.

If IL use is to remain economically viable, genetic improvement strategies, (part of the Egerton educational process), are required. The crossbreeding of the endemic animals with exotic livestock, for example, to combine high productivity and reproductive efficiency of the latter with the hardiness, disease resistance, and adaptability of former IL. However, in the case of such crossbreeding strategies these need to be carefully managed and restricted to levels that avoid genetic erosion of indigenous breeds; it would defeat the whole programme purpose if the repositories for local IL genetic diversity were diluted and destroyed in the process.

Genetic diversity in cattle

IL species contain considerable genetic variation through natural selection, which

they have used to adapt to a number of differing and often harsh environments and diversity is essential to meet man's need for sustainable food and agriculture. The FAO says that current IL populations and herds account for about 70 per cent of the total livestock across Africa and are made up of between 100 to 150 indigenous cattle breeds, which can be broken down into four main breed categories: Humpless cattle, in West and Central Africa; Humped cattle (Zebu), in East and the drier parts of West Africa; the Sanga variety in Eastern and southern Africa; and Zenga varieties in Eastern Africa.

Traits in these include: in the Humpless, including longhorn N'Dama and Kuri, a hardiness to harsh climatic conditions and resistance to diseases such as the N'Dama's particular tolerance to trypanosomiasis, which restricts having exotic cattle in these regions; in humped cattle like the Zebu are better at regulating body temperature than humpless cattle with lower water requirements as a result, and have hardened hooves and lighter bones enabling greater endurance for long migrations.

Such traits, carefully managed can help ensure food security and IL relevance for the future.

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Can bovine colostrum mitigate piglets' post-weaning growth lag?

IN A RECENTLY concluded experiment carried out in Canada, bovine colostrum was added to the creep feed of piglets.

Bovine colostrum is a good source of nutrients and growth factors, and is very palatable. It was added to the creep feed of piglets in the farrowing room and to the phase one diets immediately post-weaning to determine if it will increase feed intake, and help reduce the impacts of the post-weaning growth lag. Overall, the bovine colostrum had no beneficial effects on growth or feed intake of the piglets. However, it did increase the number of piglets that consumed the creep feed or phase one diet immediately after weaning.

Weaning is a stressful time for a piglet, and as a result they may undergo a "post-weaning growth lag," characterised by failure to consume solid feed in the hours or days immediately post-weaning. This can be especially detrimental for piglets already compromised because of very low birth weights, which can be a consequence of larger litters. Increased litter size reduces the overall cost of pork production by spreading out the over-head cost of sow maintenance with increased piglet numbers, and thus increased

kilograms of pork produced per sow. However, as the litter size increases, average piglet birth-weight decreases, and pre-and post-weaning mortality increases.

By supplementing bovine colostrum in the creep feed during lactation, piglets that are not receiving sufficient nutrition from the sow will benefit, and, if continued as a supplement immediately post-weaning, will aid the transition to solid diets in the nursery. The objective of this experiment was to determine if powdered bovine colostrum added to the creep feed or the feed supplied immediately post-weaning will improve feed intake, leading to improved growth. A total of 20 sows (10/week) and their litters were used for this experiment. All litters were supplied with creep feed from day 19 post-farrowing to weaning (26 ± 2 days of age). Half of the litters had supplemented bovine colostrum with their creep feed (six per cent of offered feed). At weaning, piglets were moved to the nursery and randomly assigned into nursery pens, based on treatment (\pm colostrum) and body weight. Pigs were housed four to a pen, and there were six pens/treatment/room (two rooms). The treatments were arranged as a

2 x 2 factorial (plus or minus colostrum in creep x plus or minus colostrum in phase one nursery diet). Piglet body weights were recorded one week prior to weaning, at weaning, and on days nine, 16 and 30 in the nursery. Creep feed consumption was determined daily in farrowing rooms. Feed intake was recorded in the nursery. Creep feeding began one week prior to weaning. Creep feed was spiked with 0.5 per cent brilliant blue for three days to detect eating behaviour; which was determined by anal swabbing 48 hours after the blue dye was removed. Half of the phase one diets contained colostrum and all of them were spiked with ferric oxide (red dye colour) for 24 hours post-weaning. Anal swabbing was used to determine the "eaters" of the phase one diet 36 hours post-weaning.

Colostrum, whether provided as a top dress to creep feed or added to the phase one diet, did not improve the growth of these piglets. The observation that colostrum did increase the proportion of piglets identified as "eaters" is important however, and more research is required to determine how we can take advantage of this to improve the growth and health of these piglets.

Curbing greenhouse gas emissions in cattle

IN THE PAST 40 years, the global cattle population has doubled, leading to higher emission of methane into the atmosphere.

According to research, data atmospheric concentration of methane has more than doubled in the past two decades. Taking into account for 18 per cent global warming contribution from livestock worldwide, an approach, which is sustainable to environment and business, is required.

Greenhouse gases, such as oxides of nitrogen, methane and carbon dioxide, are responsible for global warming. Out of these, methane is 21 times more powerful than other greenhouse gases. Livestock contribution of carbon dioxide emissions is only nine per cent whereas in terms of nitrous oxide and methane it is 65 per cent and 37 per cent.

Studies conducted worldwide show while there is no single process to cut methane, there are rather different ways to curb it such as improving fodder quality or feed additives that boost efficiency of these animals and reduce pollutants in manure.

Reducing methane emission

During digestion a cow uses cellulosic material from the feed and ferments it with the help of microbes in its stomach (rumen). The cow then converts feed stuff into volatile fatty acids for its energy requirements, like humans convert food into glucose for energy. In that process of fermentation, large amounts of gases (carbon dioxide and methane) form, which come out through the process of belching. Formation and belching of carbon dioxide is essential to prevent bloating but the formation of methane is actually a production loss. Studies say that methane loss from the cow could be up to 15 per cent of the gross feed energy intake.

Improving the efficiency in animals

Many studies state that the natural way to suppress methane production is to manipulate the diet to give high rates of fermentation



Methane loss from a cow could be up to 15 per cent of the gross feed energy intake.

affecting volatile fatty acid (VFAs). These desired changes in VFA proportions have been associated with increased digestion of fibre content in diet. Reducing methane is also the best way to boost a cow's efficiency by increasing milk yield per unit of feed consumed.

Ayurved products improve efficiency of biological converters through its range of products. One of its products is Ruchamax. This is used to enhance the digestion process in livestock to improve fibre digestion, manipulating desirable changes in VFAs which in turn improves the efficiency of the animal for better milk production and, at the same time, reduces methane emission by as much as 32 per cent.

Scientific studies have proved that Ruchamax acts as a natural methane inhibitor which causes reduction in methane production and results in the efficient utilisation of nutrients in the ruminants. This is due to the presence of certain active principles like saponin, tannin or essential oils in Ruchamax which either suppresses the growth of protozoal population in the rumen responsible for the production of methane or by directly inhibiting the growth of methanogenic bacteria.

Ghana's cocoa production, the world's second largest after Côte d'Ivoire, received a boost in the current crop season with a substantial price hike for farmers. Jon Offei-Ansah reports.

Ghana's cocoa sector

IN OCTOBER, THE state-owned marketing agency and watchdog, Ghana Cocoa Board (Cocobod), raised the 2014/15 farmgate price by 62.74 per cent to US\$1,760 per tonne, 5.3 per cent higher than the producer price in Côte d'Ivoire.

Cocobod hopes the price increase will reduce incentives for smuggling to Côte d'Ivoire, boost production and also help cocoa farmers make long-delayed investments in new equipment to increase crop yields. Despite having built a sound reputation over the past decade, Ghana's cocoa sector is facing challenges. The most serious has been the depreciation of the cedi, which lost 41 per cent of its value between January and October last year. Ghana's yawning budget deficit, the result of heavy spending on public sector salaries, coupled with high inflation - which averaged 15 per cent in June - caused the cedi to slide against the US dollar.

Bean smuggling to Côte d'Ivoire

This eroded farmers' real incomes - which are linked to the fixed price - and drove a surge in bean smuggling to Côte d'Ivoire in search of better prices.

Before the price hike, the Ivorian fixed price of CFA750/kg was 58 per cent higher in dollar terms than Ghana's fixed price of 3,392 cedis/kg. Another factor was the delay in Cocobod advancing funds to the field at the start of the season. Given that most licensed buying companies' (LBCs) work under tight financing constraints, this forced them to periodically suspend purchases, in turn forcing cash-strapped farmers to sell their beans over the border.

The industry estimates that at least 60,000 tonnes of beans have been smuggled to Côte d'Ivoire last year, with some estimates



A boy working in a cocoa farm in the Mankraso region near Kumasi in Ghana,

It is unclear how long Ghanaian farmgate prices will retain a premium over Ivorian prices.

ranging as high as 100,000 tonnes. In response, Cocobod has stepped up its efforts to recruit local communities in the border area to help identify smugglers and intercept smuggling routes.

A key crop for Ghana

Cocoa is one of the key crops in Ghana, accounting for more than 20 per cent of total export earnings and 57 per cent of agricultural exports. However, declining world prices in the past three years have squeezed producers and hurt export earnings, impacting adversely on the country's fiscal and current account deficits. An improving global market since October, and an anticipated stronger demand for Ghana's beans, led Cocobod to announce the price increase.

Ghana's production has almost doubled over the past decade, rising from 340,000 tonnes in 2001/02 to 632,000 tonnes in



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2009/10, owing to the improved provision of inputs, new plantings and better husbandry. Since then, production has fluctuated. Output peaked at 1,025,000 tonnes in 2011/12 (October-September), buoyed by the surge in smuggling of Ivorian beans into Ghana during Côte d'Ivoire's short civil war.

Output subsequently returned to more characteristic levels, falling to 878,500 tonnes in 2011/12 and 835,400 tonnes in 2012/13. Ideal growing weather during the 2013/14 season raised expectations of a strong crop in 2013/14, after main crop purchases reached 879,000 tonnes by the end of June.

The outlook for Ghana's 2014/15 crop is uncertain, owing to macroeconomic instability. With inflation remaining high and the cedi's recent strength unlikely to last, it is unclear how long Ghanaian farmgate prices will retain a premium over Ivorian prices. 'Given Cocobod's financial constraints, the distribution of free fertilisers and insecticides will be constrained this season, but we do not expect this to have a significant impact on yields as, in the past, much of the fertiliser did not reach the intended farmers,' regional commercial bank Ecobank said in a research note.

The impact of the depreciating cedi has not been entirely negative, however. This is because the annual financing Cocobod raises is denominated in US dollars, as are the supply contracts with traders and exporters, which has insulated Cocobod from currency volatility. In addition, Cocobod advances all of its funds for field purchases in cedis. Given the depreciation of the cedi and the fixing of the farmgate price, this has meant that Cocobod has saved substantial dollar funds over the course of the season, by some estimates as high as US\$700mn. Cocobod may choose to return some of this surplus to farmers as an end-of-season bonus, as has occurred in previous seasons, but its ability to use these funds will be constrained.

The financial troubles of the licensed LBCs are another constraint, as relatively low-cost financing in Cocobod's seed fund is stretched thin and commercial lending is expensive. This has delayed payments to farmers, who are facing their own liquidity problems. However, Cocobod's recent securing of US\$1.7bn of financing for purchases in 2014/15 was a testament of investor confidence, and it should help boost sales. 'Given the sharp improvement in the farmgate price – which has reduced the incentives for smuggling – we expect Ghana's output to grow modestly in 2014/15, to 950,000 tonnes, 5.8 per cent higher than last season and just short of Cocobod's one million tonnes target,' said Ecobank.

Grinding to be developed

Given the high volume of cocoa production and strong government support to develop grinding, Ghana is Africa's second largest cocoa processing hub, after Côte d'Ivoire. Ghana has an

estimated installed capacity of 430,000 tonnes; although only around 245,000 tonnes are currently being used, giving a capacity utilisation rate of less than 60 per cent. According to ICCO forecasts, Ghana's grind will rise by 2.2 per cent to 230,000 tonnes in 2013 /14, the equivalent of 28.9 per cent of West Africa's cocoa grind. This means that Ghana has been losing market share to its rival, Côte d'Ivoire, whose own grind has risen by a stronger 16 per cent over the past two seasons to a forecast 500,000 tonnes in 2013/14.

Ghana's cocoa grinding sector is dominated by a handful of multinationals and the former state-owned grinder, Cocoa Processing Company (CPC). Between them, Switzerland's Barry Callebaut, the USA's Cargill and CPC vie for the top share of the grind, with capacities of 67,000 MT, 65,000 tonnes and 64,500 tonnes, respectively. The USA's ADM is not far behind, with a 42,000 tonnes capacity.


Wamco, a joint venture between German investors and the Ghanaian government, has a capacity of 47,000 tonnes, but the company is not currently operating owing to severe financial and management problems, contributing to the country's high level of unused grinding capacity. Numerous small-scale grinders exist, but currently few are grinding cocoa products. The market leaders have a varied output of cocoa products. Barry Callebaut only produces cocoa liquor and nibs at its Tema-based factory (which are intended for sale to other domestic subsidiaries), while ADM only produces liquor. In contrast, Cargill produces cocoa cake and butter, while CPC produces all cocoa products (liquor, cake, butter and powder).

Ghanaian grinders are dependent on a 20 per cent discount for smaller beans, which are mainly produced during the June-September light crop and which are used for blending with main-crop cocoa, which is too expensive for exclusive use in blends. Ghana's grinders produce a variety of cocoa products, dominated by cocoa liquor (103,768 tonnes in 2011/12), but with significant volumes of cocoa butter (22,280 tonnes) and cocoa powder (18,555 tonnes).

Ghana's processing sector continues to face limitations that constrain its growth. According to ICCO estimates, Ghana's cocoa grind rose by a paltry one per cent in 2013/14 to 228,000 tonnes, well below average growth of 2.8 per cent the last three seasons. This has resulted in Ghana using less than 55 per cent of its installed capacity. Ghana's high level of unused capacity results from many causes, notably the high costs imposed by erratic power supply, ageing equipment and the financial difficulties of local processors. But in the medium term, the most serious is the constrained supply of light-crop beans.

Constant supply of small beans needed for grinding

Ghana's grinders need a constant supply of small beans, which are discounted by 20 per cent by Cocobod to help offset high production costs. However, Ghana tends to have small light crops, with the 2013/14 light crop estimated at 20,714 tonnes, compared with 499,000 tonnes in Côte d'Ivoire. The lack of sufficient supply of light-crop beans has led grinders to suspend operations in the past, as did Barry Callebaut in 2008.

The underlying cause for this has been the gradual introduction of hybrid seedlings, which produce fatter beans that are exported directly. While drier weather resulting from climate change could have an impact on bean size—the proportion of small beans hit an all-time high of 28 per cent of total output in 2012/13, up from a ten-year average of 20 per cent — it is unlikely to affect the long-term outlook for larger and higher quality beans. This raises serious questions about the viability of Ghana's grinding sector, which may require different fiscal incentives in order to operate competitively. 



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Growing coffee and bananas together not only generates more income for small-holder farmers, compared to growing either crop alone, but it can also help coffee production to better cope with the effects of climate change, a recent study has shown.

Bananas could protect coffee from effects of climate change

UGANDAN FARMERS GET 50 per cent more income from intercropping coffee and bananas than from growing either crop alone, according to a study from the International Institute of Tropical Agriculture (IITA) and partner organisations.

The study, conducted in more than 30 districts of Uganda, showed that coffee yield remained the same when intercropped with bananas, and the farmers gained additional income from the bananas. Now a recent study, conducted by Van Asten and colleagues at IITA and the International Center for Tropical Agriculture (CIAT), suggests that intercropping coffee and bananas may also help farmers cope with climate change pressures.



Growing coffee and bananas generates 50 per cent more revenue for farmers. Image: Global Conference on Agricultural Research for Development.



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Shade provided by bananas can help coffee cope with the warmer climate and with drought shocks.

Temperatures expected to increase by two degrees

Average temperatures in Uganda are expected to increase by two degrees Celsius in the coming decades, with more erratic rainfall.

This could have a considerable effect on coffee production, Uganda's most important cash crop. Coffee generates about 20 per cent of the total export revenues in Uganda and provides smallholder farmers with their main cash income. Eighty per cent of the coffee grown in Uganda is Robusta (*Coffea canephora*), which grows at altitudes up to 1,500 meters.

Arabica (*coffea arabica*) accounts for 20 per cent of the coffee grown – and for one-third of the export revenue from coffee. Arabica requires a particularly cool tropical climate that is found only at higher altitudes, generally above 1,400 meters.

Using climate models and analogues, the IITA-CIAT study found that the areas suitable for growing Arabica coffee will drastically decrease in the future.

Estimates from the study indicate that losses in the region may exceed US\$100mn annually. This is not only a threat to the country's foreign revenue, but it also puts at risk the livelihoods of millions of smallholder farmers depending on the crop.

The researchers from the IITA in collaboration with those from the Colombian-based CIAT, used climate models and climate analogues to predict the impact of climate change on coffee production.

The researchers walked down the slopes of Rwenzori Mountains, in Uganda, where the lower one goes, the temperatures get progressively warmer and drought stress becomes a more serious problem—similar to walking into a “future climate”.

The approach illustrated that areas below 1,300 metres may well become completely unsuitable for Arabica coffee production. In areas

between 1,300 and 1,700 metres, coffee will be severely affected if current farming practices that use traditional varieties and make limited use of water conservation and shade technologies remain unchanged.

Arabica is therefore very sensitive to a rise in temperature induced by climate change. Coffee is also among the top three commodity exports in Ethiopia, Rwanda, Burundi, and Tanzania.

A promising alternative

Shade provided by shade trees or bananas can help coffee cope with the warmer climate and with drought shocks. Research has shown that shade can reduce the temperature in the understory plants by up to 2°C or more.

Past research by IITA also showed that growing coffee and banana together increased the farmers' income – the coffee yield remained the same despite creating room for the bananas and the farmer gained additional income from selling the bananas. This study strengthens the case for growing coffee and bananas together as it provides both short- and long-term benefits to farmers.

"Strategies to help farmers cope with climate change will often be more successful if farmers are also able to see the immediate benefit of their investment. By growing bananas and coffee, in a year's time, the farmers will be earning extra money from selling bananas," said Dr Piet van Asten, an agronomist with IITA based in Uganda and one of the researchers. "And if coffee fails, then bananas will still provide the farmer with food and income. It is a perfect win-win situation for both crops and the farmers."

Climate already changing

The researchers also interviewed farmers in the region who said the climate was already changing—the droughts were becoming longer, rainfall was becoming more erratic, and the rainy seasons were becoming shorter. This negatively affected the flowering of coffee and reduced the sizes of the berries.

The farmers had also observed that pests and diseases such as leaf miners, coffee berry borers, mealy bugs, and leaf rust were on the rise. However, the study found that leaf rust incidences were 50 per cent lower in coffee that was shaded by bananas compared to the unshaded plants.

The findings are supported by another study by Alessandro Craparo from the University of Witwatersrand with support from IITA, CIAT, and CGIAR Consortium Program on Climate Change and Agricultural Food Security (CCAFS) and the Tanzania Coffee Research Institute (TaCRI) that is looking at the influence and impact of climate change variability on Arabica coffee in the Mt Kilimanjaro area. It found that every minimum temperature increase of 1°C will lead to a



Bananas can protect coffee from the effects of climate change.

yield loss of almost 100 kg/ha, representing 20 per cent of the current yield.

The only drawback to adding shade to coffee is that it demands more nutrients and farmers will have to invest in maintaining the soil fertility.

"The downside of adding shade or shade crops to a coffee system is that it increases competition among the different plants for water, nutrients and light. This competition needs to be managed by using good agronomic practices such as integrating fertilisers and organic nutrient inputs, appropriate plant density and canopy management, and good soil and water conservation practices to adapt successfully to climate change," Dr Van Asten said.

The studies on impact of climate change on coffee systems in Uganda received support from Climate Change, Agriculture and Food Security (CCAFS), the Consortium for Improving Agriculture-based Livelihoods in Central Africa (CIALCA) project, Oxfam, USAID, Wageningen University (WUR), and a wide range of coffee sector partners in the region.

Van Asten and his colleagues recommend a greater prioritisation of intercrop research to develop and disseminate sustainable agronomic practices that fit with smallholder constraints and objectives. They also suggest the need for institutional changes and public policies to support intercropped systems, with better linkages to bring together the priorities of farmers with those of other members of the coffee value chain. The results could further tap the potential of banana plus coffee systems to improve productivity and profitability across the value-chain, increase food and income security for smallholder farmers, and help adapt to the inevitable challenges of a changing climate. ¹⁰

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The research for these studies was conducted in collaboration with and with support from USAID, CIALCA, Oxfam, and NARO.

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Maize is the top staple and cereal crop in sub-Saharan Africa and can be processed into many different products for a wide range of end uses. Dr Terry Mabbett reports.

The maize process

MAIZE (*ZEA MAYS L.*), commonly called corn, is almost certainly the world's most widely grown cereal and the most adaptable of the cereal commodities, but still lags behind wheat in total world production. Maize's truly worldwide distribution and competitive price, relative to other cereals, provides the industry with a wider range of crop processing options and a much broader spectrum of applications in human food and livestock feed, compared with all other cereals including wheat. There are many countries in the developing world where maize is a main staple food with per capita human consumption of the commodity at correspondingly high levels.

Maize can be processed into many different products for a wide range of end uses whether at village level or on an industrial commercial scale. A large proportion of the maize-based foods and food products are still obtained by processing the cereal according to traditional methods, although the bulk demand for maize is increasingly satisfied by industrial processing.

However, there are significant changes afoot with some drift back to small scale processing of maize by utilising simple user-friendly processing machinery including hullers and equipment for wet and dry milling, alongside the larger parallel industrial developments.

A large proportion of the maize-based foods and food products are still obtained by processing the cereal according to traditional methods.

Commercial maize processing mills producing brewer's grits, maize flour and maize meal will typically operate alongside small-scale village enterprises producing significant volumes of maize-based food and products for human consumption. The range of maize types and varieties is equally huge and versatile and includes both local types grown by small farmers and the newer



Maize is the top staple and cereal crop in sub-Saharan Africa. Photo IITA.

commercial hybrid varieties cultivated by commercial growers.

There are several basic foundation reasons why maize is so versatile for cereal processing and use. Both traditional and commercial maize products are based on specific endosperm properties and quality parameters inherent to the maize grains used. Quality factors influencing and determining suitability and selection of maize varieties for particular processing, application and uses include chemical, physical, biochemical, physico-chemical, organoleptic and rheological properties. Many of these properties can be influenced and manipulated in favour of the processor through maize breeding and other agronomic practices.

The three main uses of maize are as a staple food for human consumption, feeding a wide range of livestock including poultry, pigs and cattle (as grain or silage) and as a raw material for making industrial chemicals including bioethanol. In industrialised countries the biggest proportion of the maize crop is traditionally earmarked for feeding farm livestock and the industrial production of food and increasingly non-food products.

In direct contrast the huge bulk of maize grown in developing countries is used in small scale production of human food, although, in some countries, an increasing proportion is finding its way into feed production where surpluses will allow. The

texture types of maize grain used are flint, dent, flourey or of intermediate endosperm texture, with both white and yellow coloured maize grain varieties.

Maize for livestock feed

Maize is the feed grain most widely used in livestock rations but less so in developing countries where maize used as a human food staple still receives top priority. Maize is the key energy source in feed for a wide range of livestock including poultry, pigs and large ruminants. It can be fed directly or used to formulate finished feed. Maize is unrivalled by other cereals in offering the very highest efficiency of conversion of dry feed ingredient into meat, milk and eggs. Maize has the highest net energy content with the lowest protein and fibre content. Maize is highly palatable and livestock readily consume maize rations. Protein rations for poultry and other livestock are boosted using soya meal and other high protein containing ingredients.

Maize grain can be fed to animals fresh or after some degree of processing through drying and milling, followed by compounding and thorough mixing with other feed ingredients. The mixture thus obtained can be fed directly or be further formulated into a specific product with its physical properties and composition custom-designed to target animals. By-products of industrial wet-and dry-milling of

maize are widely used in livestock feed.

Use of maize as livestock feed is still relatively low in Africa compared with industrialised countries like the United States where over 80 per cent of the maize grown is traditionally used in animal feed. That said, the 'biofuel' boom in which maize grain is now used on an increasingly large scale to ferment bioethanol could see this proportion continue to come down. The on-going rapid rise in African poultry production and consumption is the main factor responsible for increasing amounts of maize diverted from direct human consumption to animal feed.

Industrial processing of maize for food

Industrial utilisation of maize can be conveniently broken down into wet milling and dry milling. Maize processing essentially separates the grain into germ, hull and endosperm components. These fractions are further processed into a wide range of maize products used as base ingredients for food and non-food functions.

Wet milling

Main maize food products sourced from the wet milling industry are corn starch, corn syrup, high fructose syrup, dextrose and corn oil, and various by-products used for livestock feed.

Corn starch is an increasingly important product mainly used in the thickening and stabilisation of other ingredients. Many different forms and types of corn starch can be produced, each best suited for a particular function in the food manufacturing industry. For instance corn starch products are required in the manufacture of baking powder, prepared mixes, candies, baking goods and puddings. Highest use of corn syrup is in the confectionery industry, followed by

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The on-going rapid rise in African poultry production and consumption is the main factor responsible for increasing amounts of maize diverted from direct human consumption.

baking and dairy product manufacture.

High fructose corn syrup is used in a broad range of food manufacturing industries including confectionery baking, non-alcoholic sweet beverages, condiments (ketchup and pickles) and syrups. The biggest single use for maize dextrose is in baking where it is utilised as a nutrient for yeast fermentation, as a sweetener and for pastry crust browning. Other significant users of dextrose are confectionery manufacturers, canning and frozen food industries and the beverage industry, both alcoholic and non-alcoholic. Corn oil is used for the production of salad/cooking oils and margarine.

Dry milling

The main maize products derived from dry milling are maize meal, maize flour and maize



Maize flour milling machine from Shijiazhuang Hongdefa Machinery Co Ltd.

grits, along with maize oil and various by-products used for animal feed. The endosperm fractions generated during dry milling are characterised and classified by the dimensions and size distributions of their particles. These will determine composition and therefore potential use. Characterisations and classifications are:

- Grit fractions (1.2-0.6 mm) used for many different types of food both traditional and commercial including imitation rice and corn flakes worldwide. Brewer's grits are used in beer production.
- Maize meal (0.6-0.2 mm) is commonly used in meal mixes, maize bread, maize muffins and some extruded maize snack products.
- Maize flour (< 0.2 mm) is a widely used and sought after ingredient for pancake mixes, baby foods, cookies, biscuits, ice cream cones, ready-to-eat cereals, batter breading mixes, and binders for loaf-type sandwich meats. Maize flour can be pre-gelatinised and used in compounding high nutrient mixes like corn-soy-milk and



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Increased output is among the top priorities for the seed drill manufacturers, helping to reduce costs and to sow more of the crop in optimum soil and weather conditions. Michael Williams reports.



A 6.0m wide version of Kuhn's Speedliner pneumatic drill for reduced cultivation systems.

Drilling efficiency

OPTIONS OFFERED BY the leading seed drill companies include a faster forward speed or a bigger working width, and there are also time-saving design features such as using a bigger hopper capacity to extend the interval between refill stops plus simplified calibration to speed up the starting process. Many of the latest models combine more than one of these developments.

Choosing extra width is a popular option for large-scale crop production on farms with big, evenly shaped fields but is less suitable where seed is drilled in smaller, awkwardly shaped areas. An example of greater width for extra output in the precision drill sector for crops such as maize and sunflowers is the Optima TF Maxi, a recent addition to the Kverneland drill range. It has a 12.0 metres working width to cover 16 rows, and the fertiliser hopper capacity is 4,000 litres. The potential output with crops such as maize is said to be more than 100ha per day on big fields where the full potential of the drill can be used.

Special features of the Optima TF Maxi include seed metering units with electric power giving individual unit operation, with GPS compatibility allowing automatic control to avoid drilling overlaps and to cope with curved and irregularly shaped field boundaries.

Amazon's EDX series precision drills are

Delivering the seed from one large hopper means refilling is faster than dealing with one small hopper for each individual unit.

available in a choice of widths from 6.0 to 9.0 metres for up to 12 rows, but all models fold to 3.0 metres width for transport. One central seed hopper supplies all the drill units using the Amazon Xpress seed singulation system which is said to be accurate at working speeds up to 15 kph. Delivering the seed from one large hopper means refilling is faster than dealing with one small hopper for each individual unit, particularly where the seed is handled in bulk, and it can also reduce the risk of wasting seeds due to spillage while refilling small hoppers.

Fast working speeds

Fast working speeds are a special feature of the recently introduced Tempo family of drills from Vaderstad. The design includes a new seed metering system developed by the company and using positive pressure to direct each seed down a short tube, and this can provide high levels of accuracy at forward speeds up to 18 kph, the makers say. Evidence for the claimed forward speed came recently when a Tempo drill maintained an 18 kph average speed while breaking the world 24-hour maize drilling record.

Vaderstad Tempo maize drills are

available in mounted and trailed versions and in an R specification for crops such as sunflowers and soya beans plus T models for drilling maize. The drive to the seeding units is powered by an electric motor offering features such as individual row shut-off and on-the-move seed rate adjustment, and the electric drive also helps to speed up the seed calibration process.

An unusual feature of the Azurit precision seed drill that is still under development by Lemken engineers is that instead of placing the seed in single rows, each row contains a double line with the seeds placed alternately to the right and the left of centre. This arrangement, called the Delta Row distribution, is designed mainly for sowing maize seed, and the double row pattern was developed following research showing that it provided plants with increased growing space resulting in heavier crop yields. Azurit prototype drills equipped to work with fertiliser are designed to place the granules along the centre line in each row, with the seeds on both sides.

Kuhn offers a choice of Maxima precision drills in a range of widths from 2.5 to 9.0 metres for sowing up to 18 rows. There are single toolbar, telescopic and

folding frame versions and fertiliser hoppers are offered with a range of capacities from 190 to 1,350 litres. Kuhn offers one of the most comprehensive drill ranges including a big choice of working width; pneumatic and mechanical seed delivery systems are available plus combined cultivator drill options to reduce the amount of previous seedbed preparation.

For minimum tillage following a primary cultivation pass such as ploughing, Kuhn offers the Speed Liner Min Till pneumatic drill series. There are three models with 3.0, 4.0 and 6.0 metres working widths and hopper capacities from 2,500 to 3,400 litres, and the working speed for the combined seedbed preparation and drilling operation is said to be in the seven to 15 kph range.

Further up the capacity and output scale, the Horsch Pronto drill series includes the SW models with a separate trailed hopper carrying the seed and fertiliser. Mounting the hopper on its own wheels can allow massive capacity, and in the SW range this can be as much as 12,000 litres. Working widths are from 8.0 to 12.0 metres and the minimum tractor size is 210hp. The coulter pressure can be adjusted to 200kg maximum and this gives an even seed placement depth in varying soil conditions with working speeds in the 10 to 20 kph range, the makers say.

Horsch offers a full range of medium to large capacity seed drills including the KR series using a power harrow and drill combination plus the NT drills used mainly for direct seeding. The Horsch range also includes the new Focus TD series that offers the flexibility of being used for strip tillage drilling or for working in a traditional seedbed. It features the Horsch TerraGrip 3



Close-up view of Lemken's Azurit experimental precision drill being developed for maize.

Increased output for the complete crop establishment process is one of the attractions of minimum tillage, direct drilling and strip tillage crop establishment methods.

tine system that has a maximum 800kg release force and the spacing is 30cm.

Increased output for the complete crop establishment process is one of the attractions of minimum tillage, direct drilling and strip tillage crop establishment methods. By reducing the amount of soil cultivation needed before drilling, substantial time and fuel cost savings can be made, and users claim that the reduction in tractor and machinery operations can produce long term benefits to soil structure.

Strip tillage

Strip tillage involves preparing a narrow strip of cultivated soil where the seeds are

sown, leaving the rest of the field surface undisturbed. An important benefit claimed for strip tillage crop establishment is that reducing the amount of soil movement helps to reduce moisture loss, resulting in quicker crop establishment and improved growth in dry climates. Strip tillage is already established in some areas in the United States and is attracting increased interest in other countries.

The Mzuri company specialises in strip-tillage drills and has announced a new version of its 3.0 and 4.0 metres width Pro-Til models. These are trailed drills and the design improvements include increasing the seed hopper capacity by 600 litres to provide greater output. The new models both have a 3,400-litre hopper soze, and they are also equipped with a new harrow with adjustable pressure controlled hydraulically from the tractor cab. The new drills can operate with or without fertiliser placement and the options include a GPS linked seed rate management system.

Another recent development in strip tillage is the DTS drill range from Sumo UK. There are five models starting with a 3.0 metres mounted version with a 1600-litre hopper, and the trailed drills are from 4.0 to 9.0metres wide with 3000-litre hoppers on the smaller models and 3600 litres for the 6.0 and 9.0 metres drills. The hoppers can be supplied for seed only or with a division for carrying fertiliser. The DTS specification includes a choice of opener widths and the seeding rate can be adjusted to a maxim of 350 kg/ha. GPS compatibility is an option. **E**



Mzuri Pro-Til drills for strip-till crop establishment are available in 3.0 and 4.0m widths.

Around 1,800 manufacturing industries arrived in Bologna, Italy, in November for the 2014 edition of EIMA International, the exposition of technologies for agriculture and groundskeeping, which took place at Bologna Fiera.

SAME leads farming innovation with new Explorer tractor range

AMONG THE COMPANIES who exhibited new agricultural machinery at the show was tractor manufacturer, SAME Deutz-Fahr. The firm, which is headquartered in Treviso, Italy, produces tractors, harvesters and diesel engines. SAME Deutz-Fahr has seven production plants, 13 commercial branches, two joint ventures, 141 importers and more than 3,000 dealers across the globe, with a 3,500-strong workforce.

In the days leading up to EIMA 2014, SAME Deutz-Fahr held an event under the theme 'Growth through exploration' at its manufacturing plant in Treviso. The themes of growth and innovation were explored at the day-long event, which welcomed more than 500 visitors who comprised of dealers, importers, clients and journalists. SAME Deutz-Fahr CEO, Lodovico Bussolati, discussed the current agricultural landscape and how it will see a major transformation over the next few decades, as well as highlighting the company's strategy for growth. The firm's executive R&D director, Massimo Ribaldone, also took to the floor, giving technical details on the design and engineering of the new Explorer tractor range. Wolfgang Egger, the style director of Italdesign Giugiaro, went on further to educate visitors on the history of design for SAME tractors over the years. Following his talk, a round table took place titled "Italy Invests: creating successful products and keeping this success going," which consisted of Cavaliere Giorgetto Giugiaro, honorary chairman of Italdesign Giugiaro, Wolfgang Egger, SAME Deutz-Fahr vice chairmen Aldo and Francesco Carozza, and Bussolati. The day's events drew to an end with a final speech from SAME Deutz-Fahr chairman, Vittorio Carozza.

Tractor of the year for Deutz-Fahr 9340

The tractor manufacturing firm stole the spotlight again at EIMA 2014, with its Deutz-Fahr 9340 tractor winning the 'Golden Tractor for the Design' award, during an award ceremony. "To be proclaimed winner by the Tractor of the Year jury for the third consecutive year is a great



The Explorer, one of the most popular SAME tractors, now has features and breadth of range making it the ideal companion for every farmer looking for a versatile, comfortable and reliable tractor.

satisfaction for us. This award represents the best recognition for the research and development investments made in recent years," said Bussolati.

SAME Deutz-Fahr engineers have now designed the new FARMotion family of engines, in line with Stage IIIB/Tier 4i and Stage IV/Tier 4 final emission standards. The engines have been cleverly designed to achieve higher performance, constant torque and power curves, yet with low engine speeds and reduced fuel consumption. FARMotion engines are created specifically for agricultural use, being compact, reliable and easy to maintain. The company also launched its C7000 combine harvesters which have been designed to increase the productivity of operators working on medium sized land areas, with technical solutions developed to enhance efficiency, reduce downtime and lower fuel consumption. A number of key features include its multi-segment concaves that can be changed in a matter of minutes, independent electrical concave control, high inertia threshing drum, and the synchronised beater to prevent grain damage. Same Deutz-Fahr has also recently introduced the CShift, semi-automatic shift system for models with the T7200 transmission. This allows the driver to choose between the six available ranges by only using the joystick without pressing the clutch pedal or shifting.

New tractor range from Case

Agricultural machinery manufacturer Case IH, who has invested heavily in farming technologies in recent years, was also present

at EIMA 2014. The company offers a range of agricultural equipment to meet the demands of its customer base in Africa and the Middle East. African Farming spoke to Marco Raimondo, Case IH's new business director for Africa and the Middle East at EIMA International about the launch of the company's new tractor range. "During this year we have launched an important product for us called the Farmall. It's a middle range tractor that covers from 110-140 horsepower segments, it's a tier three, let's say mechanical transmission. This is an important product for Africa and the Middle East.

"In Africa there is an increasing demand for sophisticated products, but excluding South Africa, we are trying to develop the rest of Africa in two ways. On one side traditional distribution, tractors with low running cost, which are easy to maintain. Then on the other hand we have joined forces with European and other international companies buying land in Africa – in Sudan, Ethiopia and Madagascar. Then they seek a partner who can develop the full package. And these customers of course have different buying criteria. This is growing but it is still a niche of the market."

Germany-based manufacturer of agricultural equipment, Lemken also took the opportunity to showcase its new machinery. Yves Desjardins, the company's export manager for Africa, told African Farming that the firm will be launching its new seeder machine this year - the Azurit Precision Seeder. "In seeding technology we also have a new product that we have already been working on for a while: the precision seeder for maize or corn, which we will start introducing next year. Its name is Azurit. We should be able to produce the first machines this year."

Massimo Goldoni, the president of the Italian Federation of Agricultural Machinery manufacturers, FederUnacoma, noted that the 2014 edition of EIMA provided an opportunity for countries manufacturing machinery and technologies for agriculture and grounds to meet with countries seeking to use mechanisation as a solution for farming while also meeting various climatic, social and economic conditions. 

Swingtec's patented high performance fogging tube

SWINGFOG THERMAL FOG generators, were originally developed for the application of oil-based fogging mixtures, and were mainly used for vector and pest control measures. Using oil-based fogging mixtures with Swingfog machines, a good droplet spectrum of droplets between 0 and 40µm is achieved. 80-90 per cent of the droplets are in the range of 10-25µm and fulfil the actual requirements of the World Health Organisation specifying a VMD (Volume Median Diameter) of less than 30µm. In agricultural pest control measures almost all chemical preparations are water-based and the chemical has to be mixed with water. Because of the high surface tension of water, it is not possible to achieve a similar good droplet spectrum at reasonable high flow rates with water-based fogging mixtures, unless a considerable portion of special carriers is added.

Using water-based fogging mixtures at high flow rates and without adding special carriers, all brands of thermal foggers generate a rather wide droplet spectrum, and a high number of bigger droplets are falling down in front of the machines, resulting in a puddle of unfogged fogging liquid. That means that a considerable amount of the chemical preparation does not reach the target, causing pollution and a waste of expensive chemicals.

With its patented high performance fogging tube, which is available for all Swingfog machines, Swingtec has solved this problem. Using this, and without adding special carriers, the Swingfog SN50 types allow the application of water-based fogging mixtures with flow rates of up to 32 litres per hour and with Swingfog SN81 and SN101 machines up to 62 and 67 litres per hour, respectively. A good droplet spectrum is generated, which is comparable with the excellent droplet spectrum of oil-based fogging mixtures. No big droplets fall down.

Web tool tracks agricultural investments in Africa

THE REGIONAL STRATEGIC Analysis and Knowledge Support System - Eastern and Central Africa (ReSAKSS-ECA) has launched a new web tool to track investments made for African agriculture.

The new web tool, AgInvest Africa, was developed by ReSAKSS-ECA and funded by the United States Agency for International Development (USAID).

Joseph Karugia, co-ordinator of ReSAKSS-ECA, added, "The web portal facilitates partnerships, informs discussions on co-ordination and alignment of investments, guides advocacy and informs policy."

According to USAID, AgInvest Africa is expected to track investments in the agricultural sector in line with commitments to implement the Comprehensive Africa Agriculture Development Programme (CAADP).

CAADP, a programme of the African Union in the New Partnership for Africa's Development (NEPAD), is Africa's policy framework for agricultural transformation, wealth creation, food security and nutrition.

Karugia noted that the intention was to address constraints to agricultural development, including policy and institutional bottlenecks, lack of access to agricultural financing and inputs, limited access to markets and natural resources degradation.

The web portal contains information on Angola, DR Congo, Djibouti, Eritrea, Ethiopia, Madagascar, Malawi, Mozambique, Namibia, South Sudan, South Africa, Swaziland, Zambia and Zimbabwe, revealed the co-ordinator.

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A need for greater integration between radio and extension services

ACROSS KENYA, RADIO is still the dominant media channel used by small-scale farmers to obtain information on new techniques to improve their farming methods, a recent research by the International Livestock Research Institute (ILRI) says.

However, farmers lament that the information received through radio is insufficient.

More than 95 per cent of the 600 smallholder farm households surveyed across the high-to- low yield agricultural regions in the country have radio sets that provide the primary agricultural information.

Data was collected in Nakuru, Nyanza, Nyeri, Machakos, Makueni and Webuye representing all the ecological zones in the country.

The farmers mainly receive 'how to' information but lament that it is not enough to enable them to improve their food production levels or practices.

"More than 75 per cent of the households we reviewed practiced mixed crop-and-livestock farming, with an average of 4-6 people in each household occupying 1-3 acres of land. Over half of those we interviewed were women", said Christoph



Farmer Mutonyi from Rumukia with his radio which he listens to for coffee programmes. Image: Lorna Young Foundation.

Spurk, a media researcher at ILRI. Spurk is also an agricultural economist and a professor at the Zurich University of Applied Sciences, Institute of Applied Media Studies.

"One of our key findings was that government extension services are still the 'most trusted source' of agricultural information for most farmers, even though many of these services are difficult to reach and less available than expected," observed Professor Spurk during a recent presentation.

According to the researcher, most farmers listening to radio programmes received mostly technical agricultural information even though they prefer information on markets, improving incomes and fighting farm-related diseases.

In Kenya a number of vernacular radio stations such as Kikuyu station Inooro FM have short agricultural programmes. Inooro FM agricultural programme, known as Mugambo wa Murimi (Farmer's Voice), is aired on weekdays early morning and mainly concentrates on 'how to' type of information.

"It is a good source of information to farmers although we need extension workers in our regions to be able to help us translate what we hear on radio to actual practice on our farms," said Njeri Wandimi, a farmer in Mahiga location in Nyeri County.

According to Ms Wandimi, through the programme, farmers learn skills such as better ways of feeding livestock, controlling diseases in vegetables and value addition of agricultural produce such as bananas and avocados.

Another station Mbaitu FM, which broadcasts in the Kikamba language, has prioritised content on fruit farming and

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horticulture. Fruit farming in semi arid counties of Kitui, Machakos and Makueni is an economic backbone for the local economies.

The station answers farmers' questions and provides them with market information.

Radio Salaam broadcasts to coastal areas on fisheries and fruit farming in Kiswahili, and the Kalenjin radio station Kass FM focuses on dairy and maize production.

These stations receive more than 200 short text messages (SMS) from farmers needing clarification or answers of pertinent issues in their farming enterprises.

With the proliferation of mobile devices connected to the Internet, other stations are now encouraging their listeners to email questions directly to the presenters.

"Now my priority is to tend my trees better so that they can give me double yields," said Beatrice Syombua, a listener to Mbaitu FM, happy with the knowledge she receives on papaya farming through the radio programmes.

The ILRI study further noted that even though two-thirds of the households also have access to mobile phones, only 11 per cent of mobile phone owners use these devices to access agricultural applications such as



Founder of iCow, Su Kahumbu with Kenya's smallholder dairy farmers.

'iCow', which registered farmers use to receive information on, for example, optimal feeding regimes and gestation cycles for their particular cows.

"iCow" is a web-based information service that provides farmers with information on all aspects of dairying and a small fee.

Of those interviewed, 44 per cent said government extension services were the most preferred source of information - indicating a gap in availing correct agricultural information to farmers. Other farmers get information from their fellow farmers or through field days and agricultural shows.

With a ratio of one agricultural extension worker for 1,470 farmers, Kenya still falls short of the recommended one worker to 400 farmers - highlighting the need for other sources of agricultural information.

Spurk believes findings from this study highlight a need for greater integration between radio and extension services to better reach small-scale farmers and a need to provide farmers with the kind of information that empowers them in their own decision-making.

Mwangi Mumero



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NWK Agri-Services launches electronic payment system

ABOUT 15,000 ZAMBIAN farmers are expected to benefit from the electronic payment programme by NWK Agri-Services, which is aimed at addressing the issue of delayed payments of agricultural supplies this year.

The programme, which is in partnership with Musika, will enable farmers to use prepaid Visa cards. This will facilitate quicker payments to the farmers for their commodity deliveries to the firm.

According to NWK Agri-Services CEO, Pierre Lombard, the electronic payment system will minimise risks associated with the holding of huge sums of money through the automated services.

"The payment platforms will reduce the risk of cash handling to farmers, time delays in farmer payments and cash handling fees to the company. We plan to reach out to over 15,000 farmers countrywide under the electronic payment programme.

"We partnered with various financial service providers with the intention to move all our contracted farmers onto an electronic payment platform," Lombard said.

The programme will be implemented

countrywide to enable more farmers to benefit in terms of agricultural products delivered to the firm.

Under the programme, NWK Agri-Services will communicate with farmers using mobile phones which will be bought for them for communication purposes.

The system was launched last year with a view to move all the company's contracted farmers into the platform.

The company intends to work with more



NWK Agri-Services says it is targeting new beneficiaries under its mechanisation scheme in 2015.

farmers to help them increase their productivity and income at household level.

NWK Agri-Services provides opportunities for small-scale farmers to grow cotton by offering farming inputs on credit at the beginning of the season. Soya bean and fertiliser inputs have also been provided to selected yield programme farmers. In 2013, 920 farmers were supported with soya inputs.

"Farmers are offered yield improvement training programmes. Topics covered include sustainable farming techniques with a significant emphasis on farmer business schools and gender promotion as well as conservation tillage and soil fertility. NWK Agri-Services' aim is to train 100,000 farmers by the end of this year..

NWAK Agri-Services is a member of Cotton Made in Africa (CmiA) and a participant in the Competitive African Cotton Initiative (COMPACI) programme. The aim is to achieve an increased production of cotton and other crops through economically, ecologically and socially sustainable practices.

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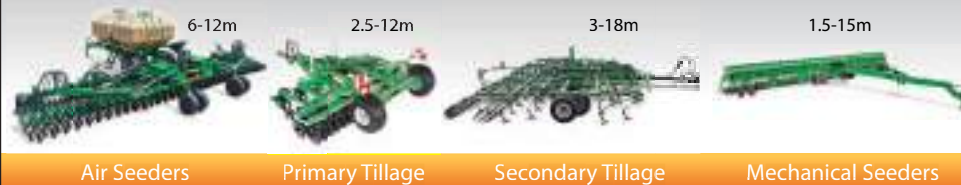
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Air Seeders

Primary Tillage

Secondary Tillage

Mechanical Seeders

AN ANNUAL GUIDE to suppliers of equipment and services for agriculture and for the primary processing of produce. The first section of the Directory lists suppliers under classification of their products and services. The second section lists alphabetically company addresses and local distributors.

The third section lists agents and distributors in Africa geographically. The Directory has been compiled from information submitted by the companies concerned.

While every care has been taken to avoid errors and omissions, they may occur; the Editor would like to be notified of these so that the 2016 edition of the Directory can be kept up to date.

Suppliers' Listings
start on page 3

Agents Listings
start on page 44

Classified Listings

Agricultural Consultancies

AGRONIS
Fieravicola - The International
Poultry Fair in Italy
ICS France

Agricultural Equipment - General

Agri-Linc
AGRONIS
Alvan Blanch
Development Ltd.
Baldan/Pan Trade
Services Ltd.
Bentall Rowlands Storage
Systems Ltd.
BT Maskinteknik ApS
Case IH
Challenger
Deutz-Fahr
Eurodrip SA
Great Plains
Manufacturing, Inc.
ICS France
Massey Ferguson
New Holland Agriculture
Nogueira/Pan Trade
Services Ltd.
SAME
Valtra

Agricultural Projects

AGRONIS
Bentall Rowlands Storage
Systems Ltd.
Eurodrip SA
ICS France
Symaga SA

Air Cargo Services

UCK Investments (Pty) Ltd.

Animal Health Products

Ayurvet Ltd.
BioPoint

Applicators for Granular Insecticides, Herbicides

Guarany Ind. Com. Ltd.

Automatic Chain Feeders

Big Dutchman
International GmbH

Bagging plant

Awila Anlagenbau GmbH
Bentall Rowlands Storage
Systems Ltd.

Bale Handling Equipment

Agri-Linc
Nogueira/Pan Trade
Services Ltd.

Biofuel/Biodiesel

Bentall Rowlands Storage
Systems Ltd.

Breeding

DRAMINSKI S.A.
UCK Investments (Pty) Ltd.

Breeding - Pedigree

UCK Investments (Pty) Ltd.

Briquetting Plants

Alvan Blanch
Development Ltd.

Bulk Storage Equipment

Bentall Rowlands Storage
Systems Ltd.
Chief Industries UK Ltd.
FRAME S.r.l.
KEPLER WEBER
Symaga SA
The GSI Group South Africa
(Pty) Ltd.

Cages & Batteries

Big Dutchman
International GmbH

Cassava Processing Equipment

Alvan Blanch
Development Ltd.

Centre Pivot Equipment

Valley Irrigation

Cocoa Production

Alvan Blanch
Development Ltd.

Coffee Processing, Handling & Storage

Swingtec GmbH

Colour Sorting Equipment

Alvan Blanch
Development Ltd.

Computers & IT Equipment

Big Dutchman
International GmbH

Consulting Services

Fieravicola - The International
Poultry Fair in Italy

Conveyors and Elevators

Awila Anlagenbau GmbH
Big Dutchman
International GmbH
FRAME S.r.l.

KEPLER WEBER
LUBING Maschinenfabrik
GmbH & Co. KG

Coolers - Environmental

Big Dutchman International
GmbH

Coolers - Evaporative

LUBING Maschinenfabrik
GmbH & Co. KG

Cotton Handling & Storage

Swingtec GmbH

Crop Drying and Ventilation

Alvan Blanch
Development Ltd.
The GSI Group South Africa
(Pty) Ltd.

Crop Handling & Storage

Alvan Blanch
Development Ltd.
Bentall Rowlands Storage
Systems Ltd.
Chief Industries UK Ltd.
Griffith Elder & Co. Ltd.
Swingtec GmbH

Crop Protection Equipment

Bentall Rowlands Storage
Systems Ltd.
Challenger
Jacto/Pan Trade Services Ltd.
Massey Ferguson
Swingtec GmbH
Valtra

Cultivators

Agri-Linc
Baldan/Pan Trade
Services Ltd.
Challenger
Great Plains
Manufacturing, Inc.
Massey Ferguson
Monosem
Poettinger
Valtra

Cultivators - Rotary

Challenger
Great Plains
Manufacturing, Inc.
Massey Ferguson
Valtra

Cultivators - Tined

Bomford
Challenger
Great Plains
Manufacturing, Inc.

Massey Ferguson
Monosem
Valtra

Disinfectants

Intraco Ltd. n.v

Drills

Agri-Linc
Great Plains
Manufacturing, Inc.
Monosem

Drinking Systems

Big Dutchman
International GmbH
LUBING Maschinenfabrik
GmbH & Co. KG

Dryers

Alvan Blanch
Development Ltd.

Egg Collection

Big Dutchman
International GmbH

Egg Layer Breeding Stocks

Lohmann Tierzucht GmbH

Egg Layer Parent Breeders - Brown

Lohmann Tierzucht GmbH

Egg Layer Parent Breeders - White

Lohmann Tierzucht GmbH

Egg Layers

Lohmann Tierzucht GmbH

Extruders for Food, Feed

Alvan Blanch
Development Ltd.
Awila Anlagenbau GmbH

Feed Additives

Ayurvet Ltd.
BioPoint
Coprex
Evonik Industries AG
Intraco Ltd. n.v

Feed Concentrates

Intraco Ltd. n.v

Feed Ingredients

Coprex
Intraco Ltd. n.v

Feed Premixes

Ayurvet Ltd.
Coprex
Intraco Ltd. n.v
Tithebarn Ltd.

Feed Processing Plants

Alvan Blanch
Development Ltd.
Bentall Rowlands Storage
Systems Ltd.
BT Maskinteknik ApS

Feed Supplements

BioPoint
Tithebarn Ltd.

Feeding Systems

Big Dutchman
International GmbH

Fertiliser Spreaders

Agri-Linc
Baldan/Pan Trade
Services Ltd.
Challenger
Great Plains
Manufacturing, Inc.
Guarany Ind. Com. Ltd.
Massey Ferguson
Monosem
PICHON
Valtra

Fertilisers

Omex Agrifluids Ltd.

Fish Feeds - General

Alvan Blanch
Development Ltd.

Fogging Machines

Big Dutchman
International GmbH
Swingtec GmbH

Foliar Fertilisers

Omex Agrifluids Ltd.

Food Processing Equipment

BT Maskinteknik ApS
F.H. Schule
Muehlenbau GmbH
Marel Stork Poultry
Processing

Forage Harvesters

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Challenger
Massey Ferguson
New Holland Agriculture
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Alvan Blanch
Development Ltd.

Genetic Research

Lohmann Tierzucht GmbH

Grain - Drying & Ventilation

Alvan Blanch
Development Ltd.
Awila Anlagenbau GmbH
Bentall Rowlands Storage
Systems Ltd.
Chief Industries UK Ltd.
KEPLER WEBER

Grain - Handling, Cleaning & Processing

Alvan Blanch
Development Ltd.
Awila Anlagenbau GmbH
Bentall Rowlands Storage
Systems Ltd.
BT Maskinteknik ApS
Chief Industries UK Ltd.
F.H. Schule
Muehlenbau GmbH
FRAME S.r.l.
KEPLER WEBER

Grain Moisture Testers

DRAMINSKI S.A.

Grains, Grain Projects & Edible Oils

Bentall Rowlands Storage
Systems Ltd.
FRAME S.r.l.

Grasscutting Machines - Forage

Bomford
Challenger
Massey Ferguson
Nogueira/Pan Trade
Services Ltd.
Poettinger
Valtra

Groundnut Handling Equipment

Alvan Blanch
Development Ltd.
BT Maskinteknik ApS

Harrows

Baldan/Pan Trade
Services Ltd.
John Deere (Pty) Ltd.

Harvesting Equipment

Alvan Blanch
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Bentall Rowlands Storage
Systems Ltd.
Challenger
Deutz-Fahr

John Deere (Pty) Ltd.
Massey Ferguson
New Holland Agriculture
Nogueira/Pan Trade
Services Ltd.
SAME
Valtra

Hedgecutters

Bomford

Horticultural Equipment & Machinery

AGRONIS
Challenger
Guarany Ind. Com. Ltd.
ICS France
Massey Ferguson
Swingtec GmbH
Valtra

Integrated Pest Management

Omex Agrifluids Ltd.
Swingtec GmbH

Irrigation & Drainage Systems

Valley Irrigation

Irrigation Equipment

Eurodrip SA
ICS France
Valley Irrigation

Land Clearing Equipment

Challenger
Massey Ferguson
Valtra

Livestock (Export)

UCK Investments (Pty) Ltd.

Livestock Handling

UCK Investments (Pty) Ltd.

Maize Shellers

Alvan Blanch
Development Ltd.
Bomford
Nogueira/Pan Trade
Services Ltd.

Manure Composters & Dryers

PICHON

Material Handling

Bentall Rowlands Storage
Systems Ltd.
PICHON

Material Handling - Bulk

Bentall Rowlands Storage
Systems Ltd.

Meat Processing and Packaging

Marel Stork Poultry
Processing
USE Poultry Tech

Mechanical Services & Equipment

Challenger
Massey Ferguson
Valtra

Medicators

Big Dutchman
International GmbH

Micronutrients

Monosem
Omex Agrifluids Ltd.

Milk Replacers

Coprex

Milling & Mixing

Alvan Blanch
Development Ltd.
Awila Anlagenbau GmbH
Big Dutchman
International GmbH

Mills

Awila Anlagenbau GmbH
Big Dutchman
International GmbH

Mills - Grain

Awila Anlagenbau GmbH
Bentall Rowlands Storage
Systems Ltd.
F.H. Schule
Muehlenbau GmbH
Nogueira/Pan Trade
Services Ltd.
Silos Cordoba S.L.

Mills - Grinding

Awila Anlagenbau GmbH

Mills - Hammer

Awila Anlagenbau GmbH
Nogueira/Pan Trade
Services Ltd.

Moisture Meters

DRAMINSKI S.A.

Monitoring Equipment

Valley Irrigation

Mould Inhibitors

Ayurvet Ltd.

Oil Extraction Equipment

Alvan Blanch
Development Ltd.
BT Maskinteknik ApS

Oilseed Production & Processing

BT Maskinteknik ApS

Palletizers

Big Dutchman
International GmbH

Pelleting

Alvan Blanch
Development Ltd.
Awila Anlagenbau GmbH
BT Maskinteknik ApS

Pig Equipment

Big Dutchman
International GmbH
LUBING Maschinenfabrik
GmbH & Co. KG
Symaga SA

Pig Feeding/Drinking Equipment

Big Dutchman
International GmbH
The GSI Group South Africa
(Pty) Ltd.

Pig Flooring

Big Dutchman
International GmbH

Pig Health Products

Ayurvet Ltd.

Pig Housing

Big Dutchman
International GmbH
Silos Cordoba S.L.

Plant Protection Chemicals

Omex Agrifluids Ltd.

Planters

Baldan/Pan Trade
Services Ltd.
Challenger
Great Plains
Manufacturing, Inc.
John Deere (Pty) Ltd.
Massey Ferguson
Monosem
Poettinger
Valtra

Plastic Flooring, Poultry

Big Dutchman
International GmbH

Ploughs - Disc

Baldan/Pan Trade
Services Ltd.
Challenger
Massey Ferguson
Valtra

Ploughs - Mouldboard

Agri-Linc
Challenger
John Deere (Pty) Ltd.
Massey Ferguson
Poettinger
Valtra

Poultry Consultancy Services

BioPoint
Fieravicola - The International
Poultry Fair in Italy

Poultry Equipment - Drinking

Big Dutchman
International GmbH
LUBING Maschinenfabrik
GmbH & Co. KG
Silos Cordoba S.L.
The GSI Group South Africa
(Pty) Ltd.

Poultry Equipment/Handling

Bentall Rowlands Storage
Systems Ltd.

Poultry Export Trade

Fieravicola - The International
Poultry Fair in Italy

Poultry Feeding

Bentall Rowlands Storage
Systems Ltd.
Big Dutchman
International GmbH

Poultry Health Products

BioPoint

Poultry Housing

Big Dutchman
International GmbH
Silos Cordoba S.L.
Symaga SA

Poultry Processing Equipment & Supplies

Marel Stork Poultry
Processing
USE Poultry Tech

Poultry Projects, Integrated

Marel Stork Poultry
Processing

Pregnancy Testers & Detection Equipment

DRAMINSKI S.A.

Public Health

Guarany Ind. Com. Ltd.
Swingtec GmbH

Rice Parboilers

Alvan Blanch
Development Ltd.
F.H. Schule
Muehlenbau GmbH

Rice Processing & Milling Equipment

Alvan Blanch
Development Ltd.
Bentall Rowlands Storage
Systems Ltd.
F.H. Schule
Muehlenbau GmbH

Rice Threshers

Nogueira/Pan Trade
Services Ltd.

Roll-out Nests

Big Dutchman
International GmbH

Salt Blocks

Tithebarn Ltd.

Seed

AGRONIS
ICS France
Monosem

Seed Cleaning Equipment

Alvan Blanch
Development Ltd.
BT Maskinteknik ApS

Seed Planting Equipment

Baldan/Pan Trade
Services Ltd.
Great Plains
Manufacturing, Inc.
Monosem

Seed Treatment

BT Maskinteknik ApS

Silos

Alvan Blanch Development Ltd.
 Awila Anlagenbau GmbH
 Bentall Rowlands Storage Systems Ltd.
 Big Dutchman International GmbH
 Chief Industries UK Ltd.
 FRAME S.r.l.
 KEPLER WEBER Privé SA
 Silos Cordoba S.L.
 Symaga SA
 The GSI Group South Africa (Pty) Ltd.

Slaughtering Equipment

USE Poultry Tech

Slurry Disposal

PICHON

Soluble Fertilisers

Omex Agrifluids Ltd.

Sprayers

GOIZPER GROUP
 Guarany Ind. Com. Ltd.
 Jacto/Pan Trade Services Ltd.

Sprayers - Crop

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Borehamwood, WD6 3FG
United Kingdom
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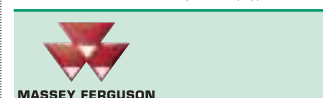


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 Centennial Avenue, Elstree
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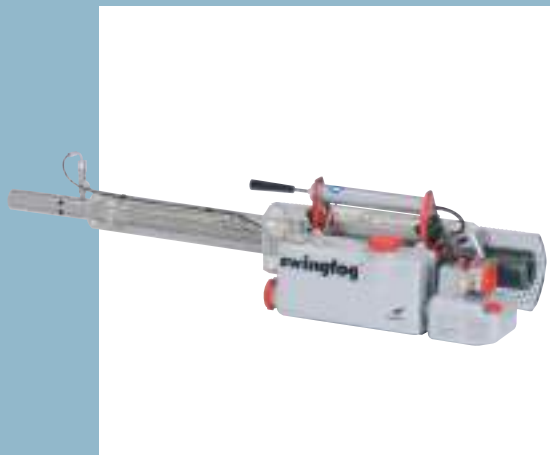
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E-mail: info@simbacorp.com

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and U.N. Drive
Monrovia
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Libya**Al Fath**

Gergaresh Road
Tripoli
Tel: +218 91 3245049/56 09649
Fax: +218 21 4775841/4778292
E-mail: sherif@technofarmlibya.com
alfath333@yahoo.com

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Kilo 7, Tripoli
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Tripoli
Tel: +218 92 3782351

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Route de Hydrocarbures
B.P. 28 Antananarivo
Tel: +261 20 2222721
E-mail: alain.ravahatra@hff.mg

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Tel: +261 20 2224844
E-mail: itagroup@moov.mg

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Route des Hydrocarbures
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Kenyatta Drive
Lilongwe
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Elandsfontein
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Niarela Rue 376, Porte 1667
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Appt 18 Bamako
Tel: +223 443 89215
Fax: +223 443 89215
E-mail: jmv@ics-agri.com

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Port Louis
Tel: +230 212 1842/43
Fax: +230 208 5809
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Grewals Lane, Pailles
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Fax: +230 212 5490
E-mail: alamusse@scomat.com
kmewasingh@scomat.com

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E-mail: smag@intnet.mu

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Tel: +262 962500
Fax: +262 252564

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Fax: +212 5 37643578
E-mail: agriart@agriart.ma

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Appt. No. 9, Kenitra
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E-mail: nordismarco@yahoo.fr

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Fax: +212 26 63645
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Route nationale 1
Casablanca, 20232
Tel: +212 55 2601060
Fax: +212 22 621588
Web: www.groupe-premium.com
E-mail: anass.aithoussa@premium.net.ma

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E-mail: contact@stokvis.ma

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E-mail: info@brazafric.com

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Avenida da Namaancha, n° 730
Matola - Maputo, Matosinhos
Tel: +258 21 720166/7
Fax: +258 21 720166
Web: www.centrocar.com/mz/
E-mail: mocambique@centrocar.com

CENTROCAR SA

Av da Namaacha, 73 Matola (Maputo)
E-mail: monica.silva@centrocar.com

Sotema Lda

Av. de Mocambique No. 4488/4524
Caixa Postal No. 378, Maputo
Tel: +258 21 470398
Fax: +258 21 471017
Email: sotema@sotema.co.mz

Trak-Auto - Beira

Tel: +258 23 353003/843 986323
E-mail: trakbeira@intra.co.mz

Trak-Auto - Maputo

Avininda Pauline Santos Gil 56
Maputo
Tel: +258 84 3981084/3012858
E-mail: rob.hayworth@trak-auto.com

Trak-Auto Lda

Avenida Paulino Santos Gil 56
Maputo
E-mail: clinton.vermaak@
trak-auto.com

Namibia**Eqstra Agri**

11, Gross Street
Tunney Industrial Estate, Elandsfontein
Johannesburg, 1600
Tel: +27 11 5528760
Web: www.eiegroup.co.za/agri-
equipment/
E-mail: leonb@sie.co.za

Nigeria**Alvan Blanch Nigeria**

PO Box 8348
52b Akhionbare Avenue, Benin City
Tel: +234 80 35860631
Web:
www.alvanblanchgroup.com/africa
E-mail: africa@alvanblanch.co.uk

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Orile Agege, Lagos
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PO Box 340
28 Creek Road
Apapa, Lagos
Tel: +234 1 4600100/5875990
Fax: +234 1 4600111
E-mail: damisae@dizengoff.com

Panafrican Group – Agricultural Division

31, Vono Road, Off Agege Motor Road
Mushin/Ilupeju, Lagos
Tel: +234 1 9034504
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Ibadan, Suites 20 & 21
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SCOA Nigeria

157, Isolo Oshodi
Expressway Isolo Ind. Area
Mushin, Lagos
Tel: +234 1 4521774
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E-mail: scoatracc@scoapl.com

TATA Nigeria Limited

Plot C89
Amuwo Odofin Industrial Layout
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Tel: +234 816 927304
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Sainte Clotilde, 97490
Tel: +262 444865
Fax: +262 482461
E-mail: contact@foucque.fr

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Ouest Agri, 5, rue Maximin Lucas
97425 Les Avirons
Tel: +262 262 3826568
E-mail: dominique.hoarau@
gammagri.fr

Gammagri

5, Rue Maxmim Lucas
Les Avirons, 97425
E-mail: dominique.hoarau@
gammagri.fr

Societe Foucque SA

69 Boulevard Du Chaudron
97490 Sainte Clotilde
Tel: +262 488787
Fax: +262 488799
E-mail: d.lacaille@foucque.fr

Rwanda

ATC-Rwanda (SDI-AG)

PO Box 2983, Route Magerwa, Kigali
Tel: +250 252 578844
E-mail: dusabeth@yahoo.fr

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Tel: +32 2 6892811
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Opp. Golf Course Junction, Kigali
Tel: +250 8493887/
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Tel: +91 11 46517185/41724285
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Fax: +221 33 8208131
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Metairie, LA
70055-5086
Tel: +221 77 9961843
E-mail: khadim.diop@ccbm.sn

Delta Irrigation

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Tel: +27 86 1113692
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136 Main Reef Road
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Tel: +27 82 653 9994
Web: www.barloworld-equipment.com
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No. 1 Wrench Road, Isando
Johannesburg, 1600
Tel: +27 11 9222300
Fax: +27 11 9222368
E-mail: paskew@nhsa.co.za

Northmec (South Africa)

14, Industry Road
Isando
Johannesburg, 1600
Tel: +27 11 9222000
Fax: +27 11 9222109
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Jeffreys Bay
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Dundee, 3000
Tel: +27 34 6321222

The GSI Group SA

PO Box 4012
Honeydew, 2040
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Parys 9585
Tel: +27 56 8177308
Fax: +27 56 8177329
Web: www.valtrac.co.za
E-mail: info@valtrac.co.za
wynn@valtrac.co.za
george@valtrac.co.za

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PO Box 148, CNR Water & Buiten Street
Parys 9585
Tel: +27 56 8177308
Fax: +27 56 8177329

Vrystaat Koöperasie Bpk

Reitz
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South Sudan**EZENTUS FZE**

Ezentus Co. Ltd., PO BOX 198
Plot 1 Juba North Industrial
Terrekaka Road
Juba, Republic of South Sudan
Tel: +971 4 2929001
Fax: +971 4 2993442
Email: matt.dunne@ezentus.com

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Afex Camp, Plot 30, Riverside, Juba
Tel: +211 912450545
E-mail: brett@lonagross.com

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Khartoum
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Ghaba, Khartoum South
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Al Shargi Str., Al Salam Str.
Arkawet, Khartoum
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Wad Medani Road
Khartoum
Tel: +249 183 216355
Fax: +249 183 216300
Email: Mahgoub.awadalla@dalgroup.com

Swaziland**Humulani Marketing (Pty) Ltd.**

Kempton Park
Isando, 1600
Tel: +27 56 5150607
Fax: +27 56 5150634

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PO Box 822
TFA Shopping Centre
West Wing SHop # 30
Off Sokoine Moshi
Tel: +255 752 976760
Web: www.brazafric.com

Brazafric Group

Tel: +91 11 46517185/41724285
Web: www.brazafric.com
E-mail: info@brazafric.com

FMD East Africa Ltd.

PO Box 14622, Avco Yard
opposite Knight Support
Dodoma Road
Arusha
Tel: +255 272 505150
Web: www.fmdea.com
E-mail: gasto@fmdea.co.tz

Greencity

PO Box 34367
Plot. No. 9 Kurasini Area
Kilwa Road, Dar Es Salaam
Tel: +255 684 551802
Web: www.greencity.co.tz
E-mail: info@greencity.co.tz

LonAgro

Plot No. 48B, Ursino Street
Regent Estate, Dar es Salaam
Tel: +255 222 772775
Fax: +255 222 772776
Web: www.lonagro.co.tz
E-mail: lukas@lonagro.co.tz

Tanzania Farmers

Service Centre (TFSC), PO Box 2101
Dodoma Road-Majengo
Arusha
Tel: +255 27 2548587
Fax: +255 27 2548969
Email: m.lieke@tfsc.co.tz

TFSC Ltd.

PO Box 2101, Arusha
Tel: +255 27 254857/2544337
Fax: +255 27 2548969

Togo**CFAO Motors, Togo**

Boulevard General Eyadema
Lome
Tel: +228 9054 006
E-mail: pybruce@cfao.com

Tunisia**Ets M Loukil Et Cie**

62 Avenue De Carthage, Tunis, 1000
Tel: +216 71 354366
Fax: +216 71 343401
Web: www.ets-loukil.tn
E-mail: contact@ets-loukil.tn

HMT

24, Rue Dagbaghi, 2ème étage
Tunis, 1000
Tel: +216 71 340345
Fax: +216 71 340955
Web: www.hmt.tn
E-mail: contact@hmt.tn

Inter-Parts

80 Avenue De, Carthage, Tunis, 1000
Tel: +216 71 256666
Fax: +216 71 355118
E-mail: mat.interparts@planet.tn

Isolab Agri

Tel: +216 71 873130/31
Fax: +216 71 873232
Web: www.isolabagri.com
E-mail: isolabagri@isolabtunisie.com

Le Materiel SA

PO Box 233, Tunis Hached
Tunis, 1001
Tel: +216 79 408484
Fax: +216 79 408483
E-mail: feridj@lemateriel.com.tn
mohamed.kooli@lemateriel.com.tn

Société Nouvelle du Comptoir CIBO

40 Avenue de Carthage, Tunis
Tel: +216 71 330239
Fax: +216 71 333816
E-mail: cibotunis@topnet.tn

Societe Partners Karim Louafi

7, Rue Bayrem, Ettounsi, Den Den
2011
Tel: +216 70605999
Fax: +216 70618819
E-mail: karim.louafi@gnet.tn

Uganda**AMLA General Supplies Ltd.**

PO Box 71204
Plot 745 Mutungo Road Luzina
Kampala
Tel: +256 414 233263
Fax: +256 717 777345
Web: www.amlags.com
E-mail: amlags@yahoo.com

Brazafric Enterprises Ltd.

PO Box 8338
Luthuli Avenue, Plot 27 Bugolobi
Opposite Uganda Batteries
Tel: +256 414 221363
Fax: +256 783 565681
Web: www.brazafric.com
E-mail: grain-ug@brazafric.com
coffee-ug@brazafric.com

Brazafric Enterprises Ltd.

PO Box 8338
Plot No. 28A Binayomba Road
Off Luthuli Avenue, Bugolobi, Kampala
Tel: +256 414 221363
Fax: +256 414 221363
Web: www.brazafric.com

Brazafric Group

Tel: +91 11 46517185/41724285
 Web: www.brazafric.com
 E-mail: info@brazafric.com

CMC Holding Ltd.

PO Box 2169, CMC Building
 Katalima Loop, Kampala
 Tel: +256 41 286780
 Fax: +256 41 286039
 E-mail: kwanusu@cmcuganda.co.ug

TATA Uganda Limited

P.O Box 7153
 Plot 47, Jinja Road
 Kampala
 Tel: +256 414 344320/21
 E-mail: chirag.tatauganda@gmail.com

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PO Box 35258
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 E-mail: leonb@sie.co.za

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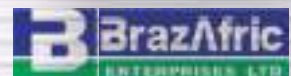


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