

JANUARY
2022
ISSUE

maricho

THE SCENT OF LOVE IS IN THE AIR

A resource for Agribusiness

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LET'S TAKE FARMING AS A BUSINESS

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Duty-free boost for Zimbabwe agriculture

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Uses of Bamboo

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Agro chemicals

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ADOPTION AND ADAPTING FOR THE NEW FARMER.

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African markets are more than meeting places



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Cover Pic - Fresh-cutted roses are transported on a rail on a flowers plantation in El Rosal, near Bogota. (Image: AFP)

*Looking forward to
another bumper harvest
in 2022*

Editor's note and contacts

Hello

“Welcome to 2022”

Here's to a new year and a new season.

I hope and trust that it will be a good, prosperous year.

“Eating a healthy diet is beneficial for dental health. The nutritional implications in dental conditions are many and complex, therefore no longer can nutrition in dentistry be summarized as “sugar is bad and fluoride is good”, writes our Nutritionist Angie Zengeya writing under the Nutrition section.

Did you know that nutrition and the integrity of the oral cavity have a synergistic relationship in health and disease?



You need to protect your dental health and increase your confidence to communicate. This is because poor oral health can have adverse effects on one's quality of life, social relations, ability to communicate and self-esteem. I encourage you to go through this article.

Away from nutrition and dental health, local citrus producers should take advantage of the trade protocol signed between Zimbabwe and China which opens the multi-billion dollar Chinese industry.

Under the pact, Chinese companies will provide experts to help farmers meet required standards and will enter into partnerships and out grower arrangements with local farmers that are eager to export the products to China.

Farmers should jump onto this arrangement and enhance their production capacity. The Chinese market is huge and exporting directly to that market will be a huge breakthrough. **Let us take our sweet & juicy Zimbabwean citrus to the Chinese market!**

Happy farming farmers.

Conn!

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IN THE NEWS

Let's take farming as a business – Masuka

By Conrad Mwanawashe



Government is developing a joint venture database, for the purpose of match-making available underutilised and unproductive land units with potential JV partners as part of efforts to transform agriculture into a business, according to Dr Anxious Masuka, Lands, Agriculture, Fisheries, Water and Rural Development Minister.

This follows government's approval of a Joint Venture Agreement Framework which allows investors to undertake farming operations with the consent of government.

"Farmers are encouraged to register with their nearest AGRITEX Office. Potential JV partners are encouraged to register with the M and E Unit of the Ministry. The forms for farmers and JV partners are obtainable from the M and E Unit," said Dr Masuka.

"It must be emphasised that all Joint Ventures must be approved by the Ministry for them to be legally-binding documents. Section 18 of the Land Commission Act Chapter 20:29 buttresses this position by asserting that no occupier of state land shall permit occupation, on a share-cropping basis, by another person unless a formal agreement has been entered into between the owner and the occupier with that agreement having been approved by the Minister," he added.

Where conversion of agricultural land (such as cropping and/or livestock to forestry) is planned, a special approval from the Ministry must be sought first, before parties can sign the Special Forestry Joint Venture Agreement. A different agreement is required to cater for the long term nature of forestry, and the delayed returns on investment but, more importantly, to consider and preserve agricultural land for national food security.

All Forestry JVs, whether registered and unregistered with the Ministry, must be submitted to the Ministry by 15 February 2022. Farmers undertaking forestry JVs must clearly indicate this on their Annual Production and Productivity Returns.

"The Joint Ventures, which government is encouraging, are aimed at increasing production and productivity on farms. In line with government thrust to increase agricultural production and productivity, abandoned farms, derelict farms and underutilised farms shall be liable for repossession and redistribution to deserving beneficiaries on the waiting list for land allocation. Holders of such land must consider JVs to quickly bring such land under production," the Minister said.

In pursuit of Vision 2030, through the National Development Strategy 1 (NDS1) and the Agriculture and Food Systems Transformation Strategy implementation framework, government is transforming the agriculture sector by making farming a business, while leaving no household, no village and no youth behind.

IN THE NEWS

“Land has become a major economic enabler. And agriculture has become a business. Land and agriculture, therefore, must cause accelerated economic activity for the attainment of Vision 2030,” he added.

It is in this regard that the Ministry of Lands, Agriculture, Fisheries, Water and Rural Development directed all A1 and A2 farmers to submit annual “Production and Productivity Forms” by 15 February each year. The new A2 permit conditions also compel all A2 farmers to provide such returns.

Farmers are, therefore, reminded to submit their returns not later than 15 February 2022. The form is obtainable from the Ministry’s Monitoring and Evaluation Unit, email address agricmonitoring2020@gmail.com and downloadable from the Ministry Website www.moa.gov.zw, Agricultural Marketing Authority Website www.ama.co.zw or Agricultural Marketing Authority / AGRITEX offices countrywide.

“Let us take farming as a business. Let us make land productive for the attainment of Vision 2030,” said Dr Masuka.



IN THE NEWS

Hello China with 'sweet and juice'

By Conrad Mwanawashe

Zimbabwe will now export citrus direct to China following the finalisation of a trade protocol that will cut out South African exporters who have, for decades, enjoyed super earnings on exporting their neighbour's fruits to the Asian giant as middlemen.

The trade protocol will remove Zimbabwe's over reliance on South Africa and European markets for its citrus.

The Chinese will also provide experts to smoothen the trade protocol and to help farmers meet required standards, itself sweet music to local producers.

Furthermore, the agreement opens doors for producers of grade b and c citrus that are deemed inferior by traditional markets.

"The sweet & juicy Zimbabwean citrus will join the Chinese market as the citrus export protocol have just been signed. We are implementing President Xi's pledge that China will open a green channel for the export of African agricultural products. It'll benefit more Zimbabwean farmers." The Chinese embassy said in a post on micro-blogging site, Twitter.

The finalisation of the protocol will also provide an impetus towards the conclusion of partnerships and out grower arrangements with Chinese companies that are eager to export the products to China. China is offering premiums to attract supply with the growing demand for citrus according farmers an opportunity to ramp up production levels which are currently low.

Also, the Asian country has agreed out of the protocol framework to provide technical assistance to Zimbabwe regarding fresh citrus exports to the Chinese market. This initiative will improve local capacity for monitoring and surveillance of citrus plantations for insect pests and diseases.

Varieties of fresh citrus exported to China from Zimbabwe include sweet orange mandarin orange, grapefruit, lemon, sour orange.

All orchards, as well as packing houses that wish to export citrus, must be registered by the MLAFWRD, and approved by both the MLAFWRD and the GACC.

To establish traceability system, all orchards registered for export to China should comply with Good Agricultural Practices (GAP).



IN THE NEWS



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IN THE NEWS

Duty-free boost for Zimbabwe agriculture

(The Herald)



John Deere tractor

The Zimbabwe Revenue Authority (Zimra) has listed import duty and Value Added Tax (VAT)-free agricultural equipment while the Ministry of Lands, Agriculture, Fisheries, Water and Rural Development has introduced a crop insurance product for Pfumvudza/Intwasa beneficiaries as the Government continues to implement a cocktail of measures to boost agricultural production.

Zimra this week said machinery such as manure spreaders, fertiliser distributors, hay balers, combine harvesters, machines for sorting eggs, machines for preparing animal feed, tractors and poultry incubators would be imported duty and VAT-free.

Stakeholders hailed the move as critical to transforming the agricultural sector for economic growth and prosperity.

Zimra said importers were required to engage clearing agents registered with the tax collector.

“The goods are treated as commercial importations. Clearance is to be done through a bill of entry and a tax clearance certificate is needed in order to be exempted from payment of presumptive tax. Failure to produce such attracts a presumptive tax of 10 percent of the value for duty purposes,” said Zimra.

IN THE NEWS

The decision was greatly welcomed by farmers who said it supported their efforts to grow the agricultural sector by easing the means of production and lowering the burden on most farmers who desperately needed modern equipment and technology.

Mrs Martha Macheke from Banket said it gave relief to those who were importing machinery aimed at improving farming.

“Value addition as well as mechanisation are both critical for us to be sustainable. This type of equipment industrialises and modernises our agriculture through innovation development.

“Mechanisation, for example, leads to precision farming which maximises efficiencies, lowers post-harvest losses, and increases the profits that a farmer can make,” she said.

Another farmer from Raffingora, Mr Tendai Masocha said the scrapping of duty on some equipment would enable them to access machinery at a lower cost and boost the mechanisation programme.

“It has been expensive for farmers to buy machinery, but without duty, it becomes affordable. This is a good move, especially on machinery,” he said.

Mr Albert Mumanikidzwa of Chinhoyi echoed similar sentiments.

“Our challenge is that sometimes we do not have access to foreign currency. Hopefully, we will have easy access to foreign currency so that we can import machinery and boost production and alleviate poverty,” he said.

The Government had been making huge efforts to revive the agriculture sector by incentivising the importation of machinery.

On the other hand, the area yield index crop insurance, which will be technically directed by Pula Advisors, is meant to protect Pfumvudza farmers from heavy impact of climate change vagaries.

Beginning in the 2021/22 agricultural season, the Ministry will implement a pilot exercise with financial support from development partner, Mercy Corps Zimbabwe.

Pula Advisors has been contracted by Mercy Corps’ AgriFin Digital Farmer (ADF) to provide technical assistance for the design and implementation of a comprehensive area yield index insurance on the inputs distributed under the Pfumvudza initiative in Zimbabwe.

Mercy Corps’ AgriFin Digital Farmer (ADF) is a two-year, \$5 million initiative that aims to support the expansion of high-impact, digitally-enabled services to at least one million farmers and to expand the services to a further five million smallholder farmers in partnership with Gates and Bayer foundation.

IN THE NEWS

The expansion efforts will be delivered by growing ecosystems of diverse service providers and building farmer income, productivity and resilience by 50 percent while reaching 40 percent women. Permanent Secretary in the Ministry of Agriculture, Dr John Basera said the ministry established a team chaired by the Agricultural Finance Corporation (AFC) Insurance to collectively model out piloting of the Area Yield Index Crop Insurance.

“The task team, which comprises the ministry and relevant stakeholders, is being technically advised by Pula Advisors and they have so far green-ticked a number of key elements and are ready to roll the trial run during this 2021/22 agricultural production season covering farmers under the Pfumvudza/Intwasa Programme,” he said.

“The piloting of the area yield index crop insurance will this season be undertaken in Rushinga and Mwenezi Districts covering about 30 000 smallholder farmers under the Pfumvudza programme for a sum insured of over USD1 million.

“Recognizing the value likely to be created, the Ministry commits itself to fully supporting the associated activities and has activated its structures and institutions to ensure the piloting exercise is a success,” he said.

Dr Basera commended FBC Insurance (Pvt) Ltd for coming on board as the insurer for the pilot exercise. Ministry chief director, strategic policy planning and business development Mr Clemence Bwenje said the pilot exercise would be exciting as it was premised on the objective of providing proof of concept, showing the benefits, costs, relevance and possibility of scaling out the area yield index crop Insurance next season.

“The evaluation to be produced by the task team will be instrumental in informing policy to the farming community, stakeholders and Government as it will highlight on the quality and scalability of the insurance product,” he said.

Mr Bwenje emphasized that the overarching impact of rolling out such insurance products was to sustainably and affordably protect smallholder farmers from key agricultural risks through the use of insured inputs, which in turn encouraged better farming practices, raised yields while providing compensation (payouts) to support farmer resilience when losses occurred.

“The assurance is that the project will be highly technology and data-driven, enhancing Government’s delivery capabilities and introducing innovations in digital insurance to the sector. “Insurance in agriculture has been the missing link also given its ability to create opportunities for agricultural investments”, Mr Bwenje said.

Pula Advisors, regional manager for Anglophone Africa, Ms Cynthia Tapera, said the area yield index crop insurance would insure farmers’ harvest.

IN THE NEWS

"It is an insurance cover that insures farmers against a pre-set historical benchmark. The perils covered in this product are windstorm, frost, excessive rainfall, heatwave, hail, floods, drought, pests and diseases. The pilot will focus on the maize value chain.

"Climate change is upon the whole world and the results are clear for everyone to see. The damaging impact is felt by the smallholder communities with no other sources of income other than agriculture," she said.

Smallholder farmers in Zimbabwe are increasingly exposed to systemic climate change risks such as droughts, dry spells, delayed seasons, floods, hailstorms, pests, diseases and many more hence the need for insurance service.- Herald



INVEST IN CROP INSURANCE





Caption Pic1 - A worker arranges roses on a flowers plantation in el Rosal, near Bogota. (Image: AFP)

Colombian flower market blooming ahead of Valentine's Day

Colombian flower industry is in full swing ahead of Valentine's Day. The roses will spread love across the world.

"Right now we are already in the middle of the Valentine's Day season for 2022, one of the two main seasons along with Mother's Day every year. We expect around 650 million flowers to be sold, because it is Valentine's Day, mostly roses but all kinds of flowers are sold," said Augusto Solano, President of Colombian flowers exporters association.

The association says sales are now back to pre-pandemic levels but challenges still remain.

"The main thing has been to protect the health of the workers so that they are able to continue the operation, and on the other side, the logistic problems, the lack of aerial transport and the increase of the costs of the aerial transport," Augusto added.

"At least we women love flowers. It is a big present. And to know that we are producing flowers so that in other countries they can use them as a gift to express love, and to express friendship, is something very beautiful," said Dora Yamile Vasquez, a worker.

"At least we women love flowers. It is a big present. And to know that we are producing flowers so that in other countries they can use them as a gift to express love, and to express friendship, is something very beautiful," said Dora Yamile Vasquez, a worker.

Source - AFP



Caption Pic2 - A worker arranges flowers in el Rosal, near Bogota. Colombian flowers industry export millions of roses and all kind of flowers around the world ahead of Valentine's Day on February 14. (Image: AFP)

AGRICULTURE ECONOMICS

The value of agricultural commodities is in their prices on the market



By Charles Dhewa

Prices of agricultural commodities in various markets are some of the most under-rated insights in African agriculture. Policy makers are more concerned with prices of processed products such as bread, cooking oil, sugar, margarine, maize meal and imported products such as fuel. There is no interest in tracking prices of daily basics like leafy vegetables, tomatoes, onion, potatoes and many other commodities on which the majority of urban and rural low income households depend.

Without prices, the Ministry of Lands, Agriculture, Fisheries, Water and Resettlement or Ministry of Finance and Economic Development will not be able to know if the agriculture sector is making a profit or loss. Where some countries celebrate a bumper harvest, gluts in disorganized markets often suppress prices, translating to low income and more poverty for smallholder farmers. A farming community that sells 100 000 tons of maize in the mass markets at USD3/bucket collectively earns USD3 million but if the costs of inputs such as fertilizer are added to this figure to make it USD5 million, it means the community has incurred a loss of USD2 million from maize production. Rather than ending with celebrating bumper harvest, returns at farmer level should be a key consideration.



A photograph of a man in a plaid shirt looking at a tablet in a field of green plants. The image is partially covered by a green box containing the title 'AGRICULTURE ECONOMICS'.

AGRICULTURE ECONOMICS

Market prices have broad and deep implications

Market prices have major implications for all actors such as farmers, transporters, traders, processors, consumers and policy makers. That is why tracking prices should start from production zones all the way to diverse markets, showing prices and trends for different commodities in different markets. The agriculture ministry and relevant departments such as extension services and marketing authorities should know the value of commodities traded as well as prices in mass markets that distribute more than 70% of the surplus commodities. Ignoring the mass markets is ignoring information about three quarters of food distribution.

Many farmers who earn low prices from a particular commodity are likely not to grow that commodity next season and this can be a reversal of the bumper harvest. That is why policy makers should be interested in balancing the affordability of commodities with profit for farmers. While consumers are happy about low prices, what about the farmer? There is need for mechanisms that support pricing systems in mass markets. As long as production and supply remain uncoordinated, price volatility will continue making it difficult for value chain actors to plan. Prices will change frequently because markets will not be informed about what is coming from where, when, by whom and in what quantities. Absence of institutions interested in what is happening in mass markets, implies that the valuation of agriculture commodities in mass markets is always missing.

The power of strong linkages and fluid records

In many African countries, a major weakness is the absence of linkages between government departments such as the ministry of agriculture and that of local government. Consequently, there is no proper pathway for sharing knowledge and information as well as handing over roles and responsibilities embedded in commodities that move from production zones to mass markets which are often under the jurisdiction of local authorities.

Very simple commodity sales and stock tracking tools can be introduced in agricultural supply chains. When tracking starts at farmer level, it enables the farmer to track commodities before and after harvesting, showing how much is used for household consumption and surplus remaining for the market. Data should show volumes consumed at household or community levels, what is used for stock feed, surplus for the market and how much is given to relatives or used as modes of payment for labour.

While farmers are capacitated to keep records of fertilizer, rainfall and others, there are often no records of how they use their harvests. Any farmer can sell what s/he wants without consulting local extension officers who assisted in production. If farmers keep records on sales, policy makers should be able to assess the extent to which farming is becoming a profitable business. Sales records can also show how different markets are saving the interest of farmers and the extent to which different markets are contributing to agricultural and rural development. If the records show that smallholder farmers get 70% of their income from informal mass markets, policy makers will be compelled to improve infrastructure and other facilities in mass markets that are patronized by the majority.

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THE AGRONOMIST

Uses of Bamboo

By Peter Marimi

Talking about uses of bamboo here is one of the most interesting aspects of bamboo which is said to have well over 1000 documented uses.



Starting with household construction UNESCO says that 70 hectares of bamboo produce enough material to build 1000 houses. Currently over 1 billion people live in bamboo houses. From bamboo you can get your scaffolding, window and door frames, roofing and flooring materials, blinds, ladders and many more products which would be much cheaper than those made of steel. For us in Zimbabwe you can add things like chicken, goat, sheep and calf houses, dog kennels, portable cabins, your chitanangare, and numerous other uses around the home where one would have used wood. That gazebo of yours can be made of bamboo from top to bottom and for the gochi gochi or braai you will be able to do it on bamboo charcoal. In the house you can use bamboo to get a wide range of kitchenware that include mugs, chopsticks, spoons, forks, knives, bowls, water bottles and the hollow culm can be used to cook food. Leaves are used as wrappers when steaming food.

Other utensils can be in the form of baskets, tswanda, matengu and sero. While in the house bamboo will provide you with food as some of its shoots are edible in recipes that are even found in hotels. A cup of bamboo tea is quite invigorating or you may prefer bamboo sweet wine, beer or soft drink. While enjoying yourself you will be seated on bamboo sofas, chairs and tables after which you can sleep on a bamboo bed using bamboo sheets and pillowcases. In the morning you can use a bamboo towel when bathing and bamboo tissue in case you want to use the toilet. The ear buds, toothbrush and toothpick will be made of bamboo too. In the event that you get sick there are different medicines available made from bamboo that can treat diseases like cancer, kidney and venereal diseases.

Writing more about bamboo I could be writing on a book made from bamboo using a pen whose barrel is also made from bamboo after selecting the pen from my bamboo pen holder. If you are that person who enjoys a wide variety of music you can sample music coming from different bamboo musical instruments. Traditional Chinese musical instruments include the flute, jinghu, banhu and erh. China actually has a national bamboo orchestra which plays instruments like bamboo dippers, a percussion instrument composed of five or six drums of different sizes, a dozen different kinds of flutes and the huge dragon drum made from the world's thickest bamboo. Coming to modern music you can also have both bamboo electric and acoustic guitars.

THE AGRONOMIST



For the sportsperson you can go shopping for bamboo cricket bats, surf boards and helmets while the toddlers will be playing around the homestead using bamboo toys. Playing without working hard will lead to hunger and poverty. Agriculture practiced well puts food on the table and cash in your pocket. Here you can use bamboo as well especially in your greenhouse as support structures for your crops like tomatoes, cucumbers and peas. Even here in Zimbabwe tobacco farmers are saving forests by using bamboo to treat tobacco instead of cutting down trees that take so long to grow. Bamboo charcoal can also be used for cooking in homes thereby saving our trees while using the leaves as fodder for domestic animals. Bamboo is the staple food of the famous Chinese giant panda making up 99% of its diet. In order to prevent veld fires that destroy forests, homes, crops and even humans every year, farmers can use bamboo as a fireguard as it does not burn easily. They can also use bamboo to make that “ngarani” for storing their maize for drying before sending it to the GMB. After a hard day’s work why not refresh by going to the river or dam to fish with that strong bamboo fishing rod or check if the bamboo fish traps caught anything. Their homes and gardens will be safe from wild and domestic animals because they are surrounded by beautiful and strong bamboo walls.

Talk of GMB how will farmers transport their produce as they need to cross that stream, Mutorahuku that does not have a bridge? No need to worry. With bamboo they can make a bridge that is strong enough for a 16 tonne truck to cross over it. After selling their crops they will have enough cash to buy bicycles that have bamboo frames, quite light for moving around on their rough and sandy terrain. Still on transport, Uganda is making electric buses with the floor made from bamboo.

Let us leave it here. There is no way one can exhaust the well over 1000 documented uses of this wonderful plant. No need to limit ourselves to the documented uses. One can still be creative and innovative and find other numerous ways of utilising bamboo. What is left is to see how we in Zimbabwe can be able to grow and utilise bamboo in different ways after growing it on a large scale in order to improve our lives and conserve nature.



TOBACCO

Side marketing- a ticking time bomb for the tobacco industry



This year, 2022, the Tobacco Industry and Marketing Board (TIMB) is on an accelerated drive to end tobacco side marketing. This criminal practice is responsible for the loss of millions of dollars annually and has the potential to kill the tobacco industry.

TIMB cannot accurately ascertain how much is lost annually since side marketing is an illegal activity whose statistics cannot be accurately ascertained, however, in 2021 alone five exporters lost fifty seven million United States Dollars as a result of several factors and chief among them being side marketing.

Side marketing is a form of contract default where contracted tobacco growers sell their tobacco to third parties in breach of the contractual agreement which states that tobacco shall only be sold to or bought by the contractor who provided inputs to the grower. It is suffice to mention that side marketing can be perpetrated by either a farmer or illegal buyers who also include errant licenced contractors.

Tobacco selling in Zimbabwe was done exclusively through auction whereby tobacco producers mobilized the necessary cropping resources on their own and took their crop to an auction floor of their choice and the highest bidding buyer secured the produce. However, from the 2004 selling season this system was changed with the introduction of contract growing and marketing of tobacco.

A licenced tobacco buyer (contractor) provides inputs required for tobacco production to the farmer, with the contractor guaranteeing to buy all the tobacco contracted at prices (per grade) equal to or higher than those prevailing on the auction floors. This way the farmer gains more.

Despite guarantee of fair and prompt payment in the contract system, some tobacco growers and licenced contractors engage in the criminal practice of side marketing to their own disadvantage. In the same vein, Middlemen also illegally buy tobacco they did not sponsor at less prices so they too can get profits when they sell that tobacco at auction floors whilst some licenced contractors also buy tobacco from farmers not contracted to them. It therefore implies that losses through side marketing can also be attributed to some illegal acts by licenced contractors who are in the habit of purchasing tobacco which they did not sponsor.

Each grower number is linked to a bank account. When side marketing, the unlawful buyer who can even be a licenced contractor allocates a grower number commonly known as a company "grower number" and payment is paid into the bank account linked to it. It is then the buyer's discretion whether to pay a farmer immediately or reinvest in other ventures for a period then pay when they wish and in some cases default the payment.

In case of such an illegal transaction, TIMB cannot arbitrate on pricing or pressure the contractor to pay when they delay because this will be tantamount to enforcing and promoting crime. With such knowledge, uncouth contractors take advantage and profiteer knowing such growers fear fines and prosecution.

Contractors who are victims of side marketing engage debt collectors to confiscate that grower's registered property to the tune of the contracted amount. Many growers are unaware of this eventuality hence they lose assets.

When contracted tobacco is sold to the rightful contractor profits are realized by both parties. Such a contractor will be in a space to support more hectares of tobacco the following year, the farmer will receive inputs for the next farming season early and they can increase their hectarage. This is key as we work towards producing 300 million kilograms of tobacco a year and a 5 billion dollar tobacco industry by 2025.

TIMB introduced the Inspectorate Department in 2021 to specifically devise ways to prevent, detect, investigate and address all illegal activities including side marketing in the tobacco industry. This Department has deployed Inspectors in all tobacco farming regions in this regard.

Geographical Information Systems (GIS) have also been introduced at local and national level to mark cardinal points of every tobacco field, constantly monitor progress and collate with the crop assessment report to make sure all self-financed tobacco is sold at auction and contract tobacco is bought by the rightful contractor.

We encourage all players in the tobacco industry including licenced contractors to be honest stewards of the industry, varimi/ macontractor akavimbika, abalimi /amacontractor athembekileyo.



TIMB HAS ZERO TOLERANCE TO SIDE MARKETING



DISADVANTAGES OF SIDE MARKETING:

- Kills the industry
- The farmer is offered low prices
- Late payments to farmers with no arbitration
- Cancellation of contractor's license for involvement in side marketing
- Loss of personal property to debt collectors
- Risk of arrest
- Risk of suspension of grower number or blacklisting
- Reputation risk to contracting company involved in side marketing



Report side marketing to TIMB:

Inspectorate Department
429 Gleneagles Road,
Southerton, Harare
0782 958 597
email-info@timb.co.zw

REGIONAL OFFICES:

Mashonaland West 0773 702 679
Mashonaland Central 0715 898 211
Mashonaland East 0772 635 966
Manicaland 0773 034 285

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31 January 2022

P. O. BOX 1909
HARARE ZIMBABWE

To: All Tobacco Growers
cc: Contractors
Merchants
Agrochemical Companies

Please address all
correspondence to the
Chief Executive Officer

Dear Grower

AGROCHEMICALS APPROVED BY THE TOBACCO RESEARCH BOARD: 31 January 2022

The agrochemicals approved for use on tobacco by the Tobacco Research Board during the first quarter of 2022 are shown in Table 1. Any agrochemical not appearing in the table is either not currently countenanced by the TRB or has been removed from the list of approved agrochemicals based on the provisions of the new Pesticide Approval Scheme Service which came into effect on 1 July 2011. The list of agrochemicals which TRB no longer approves for use on tobacco and whose approvals will not be renewed are shown in Table 2.

As over 90% of the Zimbabwean tobacco crop is exported, the tobacco must meet stringent international agrochemical regulations for international acceptance and maintenance of markets especially in an increasingly competitive global market. In this regard, a number of agrochemicals have been withdrawn from use on tobacco. Among these is Pendimethalin (a suckercide) which is no longer recommended for use on tobacco due to high residues detected on cured leaf. Fortunately, effective alternative suckercides, Flumetralin, N-Decanol and Pelargonic acid are already registered for use by growers.

Should there be any queries regarding the above, or if further information on a particular product, is required, please feel free to contact Kutsaga Research Station's Crop Productivity and Plant Health Services Divisions on telephone (0242) 2575 289-94 or toll-free, 0800 4511 or Email: tobres@kutsaga.co.zw or visit Kutsaga Research Station, Airport Ring Road, Harare.

Yours faithfully,

A handwritten signature in black ink, appearing to read "Zimazile Jazi".

Zimazile Jazi
TRB Pesticide Approval Scheme Service

AGROCHEMICALS APPROVED BY THE TOBACCO RESEARCH BOARD: 31 January 2022



TABLE 1: AGROCHEMICALS APPROVED FOR USE ON TOBACCO – 31 January 2022

CHEMICAL NAME*	TRADE NAME	COMPANY DISTRIBUTOR	TRB CERT. NUMBER		EXPIRY DATE
			OLD	CURRENT	
FUNGICIDES					
Acibenzolar-s-methyl ⁶	Torrent 50 WG	CP Chemicals	N/A	20-23-B-97	10-Oct-23
	Bion 50 WG	Syngenta	17-20B-87	21-23-B-22	02-Mar-23
Azoxytrobin ⁶	Azoxytrobin 250 SC	Magchem	N/A	20-22-B-06	15-Jul-22
	Azoxytrobin 25 EC	CP Chemicals	18-20-B-56	20-23-B-47	25-May-23
	Ortiva 250 SC	Syngenta	17-20-B-35	21-23-B-26	25-May-23
Azoxytrobin + Difenoconazole ⁶	Amistar Top	Syngenta	17-18-B-01	19-21-B-35	27-Nov-21
	Garrison 350 SC	Cropserve	N/A	20-22-B-72	28-Oct-22
	Azoxy Duo	Magchem	N/A	20-22-B-06	30-Dec-22
	Othello Top	Cropserve	18-21-B-111	21-24-B-33	11-Apr-24
	Supertop 32.5 SC	CP Chemicals	18-21-B-79	21-24-B-121	18-Jul-24
Azoxytrobin+ tebuconazole ⁶	Inhibit	Refloie	N/A	21-24-B-46	07-Sept-24
Chlorothalonil ⁶	Mycoguard	Polachem	N/A	19-22-B-58	13-Oct-22
	Chlorothalonil	Curechem	N/A	20-23-B-43	21-Jan-23
	Bravo 720 SC	Syngenta	15-18-B-21	21-24-B-43	04-Jan-24
	Chlorothalonil 500 SC	TSA	20-21-B-27	21-24-B-54	18-Mar-24
Copper oxychloride ^A	Copcure 85 WP	Curechem	16-19-B-61	19-22-B-14	02-Mar-22
	Copper oxychloride	TSA	17-20-B-18	20-23-B-20	23-Feb-22
	Copper oxychloride	C.P Chemicals	N/A	20-22-B-85	05-Jul-22
	Copper oxychloride	Magchem	N/A	21-22-B-42	15-Jul-22
	Copper oxychloride 85 WP	ZFC	17-2-B-34	21-23-B-75	19-Jul-23
	Copper oxychloride 85 WP	Polachem	17-20-B-65	20-23-B-55	23-Jun-23
Difenoconazole ⁶	Difenoconazole 250 EC	ZFC	18-20-B-06	21-23-B-76	09-May-23
Fluoxystrobin + Chlorothalonil ⁶	Evito C	Polachem	17-20-B-64	20-23-B-51	13-Jul-23
Fluoxystrobin + tebuconazole ⁶	Evito T	Polachem	17-20-B-63	20-23-B-52	06-Jun-23
Kasugamycin Hydrate ⁶	Kasumin	Polachem	N/A	21-23-N-69	26-May-23
Mancozeb ⁶	Mancozeb 800 WP	Refloie	17-19-B-59	19-21-B-27	13-May-22
	Mancozeb 800WP	Magchem	N/A	19-22-B-38	02-Jun-22
	Mancozeb 800WP	ZFC	18-19-B-04	19-22-B-51	16-Jul-22
	Curethane	Curechem	N/A	20-22-B-46	24-Dec-22
	Dithane	Cropserve	17-20-B-09	20-23-B-12	10-Jan-23
	Mancozeb 80 WP	Windmill	N/A	21-23-B-124	31-Jan-23
	Mancozeb 80 WP	Polachem	17-20-B-68	20-23-B-53	04-Apr-23
	Mancozeb 80 WP	TSA	20-21-B-42	21-24-B-50	18-Mar-24
	Mancozeb 800 WP	Refloie	18-21-B-20	21-24-B-37	19-Mar-24
Metalaxyl+Mancozeb ^A	Crater Mix	Polachem	16-19-B-75	19-22-B-70	08-Sept-22
	Metalaxyl + Mancozeb	Agricura	N/A	21-22-B-16	09-Sept-22
	Victory 72 WP	Sineria	17-20-B-83	20-23-B-74	06-Jun-23
	Metalman	ZFC	17-18-B-77	21-23-B-78	21-Dec-23
	Metalaxyl + Mancozeb 68 WP	CP Chemicals	18-21-B-49	21-24-B-120	09-Jul-24
Propamocarb hydrochloride ⁶	Siga 72 SL	CP Chemicals	N/A	20-23-B-99	10-Oct-23
Pyraclostrobin+ Dimethomorph ⁶	Cabrio Duo	Pivotal	17-20-B-92	20-23-B-90	11-Sept-23
Tebuconazole ⁶	Folicur 250 EC	Bayer	17-20-B-36	20-23-B-38	8-May-23
	Tebuconazole 250 EC	ZFC	17-20-B-76	20-23-B-58	09-May-23
	Tebuconazole 250 EC	Prime Agro	N/A	21-24-B-83	02-May-24
Triadimenol ⁶	Shavit	ZFC	16-19-B-90	21-22-B-79	31-Mar-22
	Baytan 150 SF	Bayer	N/A	19-22-B-21	09-Apr-22
	Triadimenol	Magchem	N/A	20-22-B-10	02-Jun-22
	Poladime 250 EC	Polachem	19-20-B-03	20-23-B-103	04-Nov-23
	Shavit	Adama	17-20-B-48	21-23-B-72	03-May-23
	Triadimenol 25 EC	CP Chemicals	18-20-B-93	21-23-B-04	17-Nov-23
	Shavit 25 EC	TSA	20-21-B-28	21-24-B-52	18-Mar-24
	Triadimenol 250 EC	Fercochem	18-21-B-31	21-24-B-57	11-May-24
Trifloxystrobin ⁶	Twist 500 SC	Bayer	18-21-B-21	21-24-B-38	07-Mar-24

* Please refer to the Flue-cured Tobacco Handbook Section H for rates and recommendations

HERBICIDES					
Bentazone ^A	Bentazone 48 EC	CP Chemicals	18-21-C-57	21-23-C-48	17-Nov-23
Clethodim + Haloxyp- r-methyl ⁶	QuickStep EC	Tiger Agro	N/A	21-22-C-102	29-Apr-22
Clomazone ⁶	Command 48EC	Pivotal	16-19-C-71	19-22-C-48	22-Jul-22
	Warrior	Refloie	18-19-C-82	19-22-C-19	15-Mar-22
	Clomazone 480 EC	Magchem	N/A	19-22-C-54	05-Apr-22
	Kalif	Africura	18-20-C-24	21-24-D-47	27-May-23
	Polazone	Polachem	N/A	20-23-C-92	30-Aug-23
	Clomazone 48 EC	TSA	18-21-C-29	21-24-C-56	18-Mar-24
	Clomazone 480 EC	Prime Agro	N/A	21-24-C-84	30-May-24
Dimethenamid-p ⁶	Frontier Optima	Pivotal	17-20-C-60	20-23-C-89	25-Jul-23
Fluazifop-p-butyl ⁶	Volley 125 EC	Polachem	16-19-C-72	19-22-C-68	13-Sept-22
	Acolfop Super 125 EC	TSA	N/A	21-23-C-77	07-Oct-23
	Fluazifop-p-butyl 12.5 EC	ZFC	18-20-C-03	21-23-C-77	07-Oct-23
	Fusilade Forte 150 EC	Syngenta	N/A	21-24-C-42	13-Jan-24
	Fluazifop-p-butyl 12.5 EC	CP Chemicals	18-20-C-55	21-23-C-12	17-Nov-23
Halosulfuron ^A	Halosulfuron	Curechem	N/A	19-22-C-66	02-Mar-22
Haloxyp Rimsulfuron ⁶	+ Apollo 11 OD	TSA	N/A	20-22-C-102	14-Jul-22
Propaquizafop ⁶	Agil 100 EC	Adama	17-20-C-44	21-23-C-73	03-May-23
	Propaquizafop 10 EC	CP Chemicals	18-21-C-52	21-24-C-119	09-Jul-24
S-Metolachlor ⁶	Intercept 960 EC	Cropserve	N/A	20-22-C-73	15-Apr-22
	Baseline 960	Polachem	17-19-C-42	19-22-C-45	26-Jul-22
	S-Metolachlor 960	Magchem	N/A	20-22-C-09	15-Jul-22
	S-Metolachlor 960	TSA	N/A	20-23-C-21	18-Feb-23
	S-Metolachlor	Refloie	18-20-C-88	18-20-C-88	13-Jun-23
	Serpentis 480 SC	Polachem	17-20-C-71	20-23-C-56	13-Jul-23
	S-Metolachlor 480 SC	Agricura	N/A	20-23-C-17	16-Jul-23
	S-Metolachlor	Syngenta	15-15-C-02	21-23-C-24	10-Oct-23
	S-Metolachlor 960 EC	CP Chem	N/A	21-23-C-11	17-Nov-23
	Rush 960 EC	Cropserve	19-21-C-05	21-24-C-66	13-Jun-24
S-metolachlor flumetsulm ⁶	+ Rescue	CP Chemicals	20-21-C-22	21-24-C-22	06-Jun-2024
Sulfentrazone ⁶	Sulfentrazone 480 SC	Magchem	N/A	20-22-101	02-Jun-22
	Sulfentrazone 480 SC	Refloie	18-19-C-80	19-22-C-17	15-Mar-22
	Serpentis 480 SC	Polachem	18-20-C-71	20-23-C-56	13-Jul-23
	Sulfentrazone 75 WG	CP Chemicals	N/A	20-23-C-23	26-Jul-23
	Authority 480SC	Polachem	18-21-C-19	20-24-C-62	06-Feb-24
	Ethos 480 EC	Cropserve	19-21-C-06	21-24-C-63	13-Jun-24
	Sulfentrazone 48 EC	CP Chemicals	18-21-C-78	21-24-C-99	06-Jul-24
	Authority 480 SC	Pivotal	18-21-C-104	21-24-C-116	07-Oct-24

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SUCKERCIDES					
N-Decanol ⁶	Sucker-Tac	Polachem	16-19-G-58	19-22-G-34	12-May-22
	N-decanol EC	Magchem	N/A	19-22-G-41	15-Apr-22
	Deccatop	Ecofarm	N/A	19-22-G-49	29-Mar-22
	N-decanol	Cropserve	18-19-G-16	19-22-G-75	12-Jun-22
	Avi N-Decanol	Fercochem	16-19-G-70	19-22-G-60	19-Jul-22
	N-Decanol	Curechem	17-20-G-30	20-23-G-40	24-Jan-23
	N-Decanol	Cropserve	N/A	20-23-G-13	31-Jan-23
	Suckerkill	ZFC	N/A	29-22-G-13	30-Mar-23
	N-Decanol 79 EC	TSA	20-21-G-18	21-24-G-49	18-Mar-24
	N-Decanol	CP Chemicals	18-21-G-61	21-24-G-92	09-Jul-24
	Thekanol	Fercochem	18-21-G-96	21-24-G-112	02-Oct-24
Flumetralin ⁶	Defeat	Cropserve	N/A	20-22-G-71	15-April-22
	Techtop 150 EC	TSA	N/A	20-22-G-60	15-Jul-22
	Topper 12.5 EC	Polachem	N/A	19-22-G-59	19-Aug-22
	Flumet 150 EC	CP Chemicals	N/A	20-23-G-67	10-Jun-23
	Flumet 125 EC	CP Chemicals	N/A	20-23-G-98	10-Jun-23
	Flumetralin 150 EC	Magchem	N/A	20-23-G-18	23-Jul-23
	Ecotopp	Ecomark	N/A	21-23-G-10	13-Oct-23
	Flumex 150 EC	Cropserve	18-21-G-33	21-24-G-64	13-Jun-24
	Primal 125 EC	Fercochem	18-21-G-34	21-24-G-88	08-Jul-24
	Prime+ 125 EC6	Syngenta	19-21-G-09	21-24-G-110	11-Aug-24
Flumetralin Decanol ⁶	+ N-Flumetralin Duo	Magchem	N/A	21-24-G-20	31-Jan-24
Pelargonic acid ⁶	Beloukha	Pivotal	N/A	20-23-G-96	17-Sept-23

* Please refer to the Flue-cured Tobacco Handbook Section H for rates and recommendations



GROWTH REGULANTS AND FERTILIZERS					
Ethephon ⁶		Ethephon 480 SL	Magchem	N/A	19-22-G-55
		Ethephon 480 SL	Polachem	19-20-G-01	20-23-G-95
		Ethephon 480 SC	ZFC	N/A	21-23-G-14
Organic Carbon ⁶	Enriched	Orgfert C	Orgfert	21-21-01	21-22-01
Organic Nitrogen ⁶	Enriched	Orgfert N	Orgfert	21-21-02	21-22-02

* Please refer to the Flue-cured Tobacco Handbook Section I for rates and recommendations

INSECTICIDES					
Abamectin + Acetamiprid ⁶	Orizon	Cropserve/Sineria	16-19-D-88	19-22-D-74	12-Jun-22
	Abamectin Acetamiprid	Curechem	N/A	21-24-D-114	26-Sept-24
Abamectin+ Thiamethoxam ^A	Solviglo 108 SC	Syngenta	17-20-D-86	21-23-D-61	08-Aug-23
Acetamiprid ^A	Acetamiprid 20 SP	Magchem	N/A	20-22-D-100	04-Apr-22
	Acolmiprid 20 SP	TSA	17-20-D-23	20-23-D-20	06-Mar-23
	Acetamiprid 20 SP	Fercochem	N/A	20-23-D-83	03-May-23
	Allice 20 SP	Polachem	17-20-D-88	20-23-D-91	18-Sept-23
	Aster 20 SP	Sineria	17-20-D-82	20-23-D-79	06-Oct-23
	Acetamiprid	Sineria	N/A	20-23-D-79	06-Oct-23
	Acetamiprid 20 SP	ZFC	18-20-D-07	21-23-D-74	07-Oct-23
	Acetamiprid 20 SP	CP Chemicals	18-21-D-75	21-24-D-97	09-Jul-24
	Bullet 60 EC	Magchem	N/A	19-22-D-42	20-Mar-22
	Volt	CP Chemicals	N/A	20-22-D-42	08-Jul-22
Acetamiprid+ Lambda-cyhalothrin ^A	Acetalam 10 EC	Windmill	N/A	21-23-D-123	31-Jan-23
	Avifast 60 EC	Fercochem	18-20-D-106	20-23-D-66	25-Sept-23
	Dash 60 EC	TSA	18-21-D-36	21-24-D-51	18-Mar-24
Acetamiprid+ Cypermethrin ^A	Aster Extrim 200 SL	Cropserve	18-21-D-112	21-24-D-67	13-Jun-24
Alphacypermethrin ⁶	Fastac 10 EC	Pivotal	13-16-D-71	19-22-D-63	14-Aug-22
Beauveria bassiana ⁶	Dynamo	Pivotal	18-20-D-100	20-23-D-87	06-Sept-23
Cartap hydrochloride ^A	Cartap 500 SP	Magchem	N/A	19-22-D-64	04-Apr-22
Chlorantraniliprole ⁶	Prevathon 5 SC	Polachem	18-21-D-41	21-24-D-80	30-May-24
	Coragen 20 SC	Polachem	18-21-D-81	21-24-D-81	17-Jul-24
Chlorantraniliprole + Lambda-cyhalothrin ^A	Ampligo 150 ZC	Syngenta	19-21-D-08	21-24-D-111	02-Jul-24
Clothianidin ⁶	Simadin 500	Ecomark	N/A	19-22-D-44	29-Mar-22
Cyntraniliprole ⁶	Benevia 100D	Polachem	N/A	19-22-D-36	20-Jun-22
	Circaden	Polachem	N/A	20-23-D-50	25-May-23
Cyntraniliprole + Pymetrozine ⁶	Plesiva Star 60 WG	Syngenta	N/A	21-23-D-59	19-Mar-23
Cyromazine ^A	Cyclone	Cropserve	N/A	20-22-D-104	15-Apr-22
	Trigard 75 WP	Syngenta	19-20-D-37	21-23-D-57	03-Aug-23
	Cyromazine 75 WP	CP Chemicals	18-21-D-53	21-24-D-105	09-Jul-24
Deltamethrin ⁶	Decis Forte	Bayer	17-20-D-07	20-23-D-02	25-Jan-23
Deltamethrin + Thiamethoxam ⁶	Ecoterex Plus 0.5%	Ecomark	N/A	21-23-D-09	04-Mar-23
Dimethoate ^R	Dimethoate 40 EC	Curechem	17-20-D-73	20-23-D-68	20-Aug-23
	Dimethoate 40 EC	CP Chemicals	18-20-D-70	21-23-D-05	17-Nov-23
	Dimethoate 40 EC	Fercochem	18-21-D-94	21-24-D-113	22-Sep-24
	Dimethoate 40 EC	ZFC	18-21-D-97	21-24-D-118	20-Oct-24
Emamectine Benzoate ⁶	Tide Plus	TSA	N/A	20-22-D-29	26-Sep-22
	Emamectin benzoate 5WG	Windmill	N/A	21-23-D-126	31-Jan-23
	Emma	Polachem	18-20-D-72	20-23-D-94	31-Mar-23
	Magmectin	Magchem	N/A	20-23-D-48	03-Jun-23
	Prove 1.9 EC	Intercrop/Sineria	17-20-D-93	20-23-D-76	20-Nov-23
	Spear 5 WG	CP Chemicals	18-21-D-74	21-23-D-13	17-Nov-23
	Spear 1.92 EC	CP Chemicals	18-20-D-51	21-24-D-97	09-Jul-24
Emamectine Benzoate + Acetamiprid ⁶	Shockwave	Cropserve	N/A	20-22-D-105	03-Sept-22
	Magmectin Ultra Duo 12EC	Magchem	N/A	20-23-D-03	23-Jul-23
	Blast Super	Intercrop/Sineria	17-20-D-81	20-23-D-78	06-Oct-23
	Spike Extra	ZFC	N/A	21-23-D-117	30-Nov-23

Emamectin benzoate + Lambda-cyhalothrin ⁶	Super Dash	TSA	18-21-D-32	21-24-D-45	18-Mar-24
	Emamectin Acetamiprid	Curechem	N/A	21-24-D-115	08-Sep-24
Emamectin benzoate + Lufenuron ⁶	Blast 60 EC	Sineria	N/A	20-23-D-77	06-Oct-23
Emamectin benzoate + Lufenuron ⁶	Hurricane 500 WDG	Cropserve	N/A	21-24-D-34	25-May-24
Flubendiamide ⁶	Belt	Bayer	16-19-D-82	19-22-D-67	18-Oct-22
Flubendiamide + Thiachlorid ⁶	Belt Expert	Bayer	N/A	20-23-D-64	31-Jul-23
Flupyradifurone ⁶	Sivanto Prime	Bayer	N/A	20-23-D-69	04-Feb-23
Gamma-cyhalothrin	Vantex	Pivotal Agro	N/A	21-23-D-109	24-Feb-24
Imidacloprid ⁶	Imidaking 200 SL	Cropserve	16-19-D-11	19-22-D-20	04-Feb-22
	Imidacloprid 200 SL	Magchem	N/A	19-22-D-43	04-Apr-22
	Imidacloprid 200 SL	ZFC	18-19-D-02	19-22-D-53	16-Jul-22
	Imidacure	Fercochem	16-19-D-65	19-22-D-61	16-Jul-22
	Imidacloprid 200 SL	Curechem	N/A	20-23-D-44	13-Jan-23
Imidacloprid ^A	Imidacloprid 200 SL	CP Chemicals	18-21-D-48	21-24-D-93	09-Jul-24
	Imidacloprid 200 SL	Prime Agro	N/A	21-24-D-85	09-Nov-24
	Imidaking 350 SC	Cropserve	16-19-D-23	19-22-D-15	25-Feb-22
	Imidacloprid	Fercochem	16-19-D-66	19-22-D-62	16-Jul-22
	Imidacloprid 350 SC	Magchem	N/A	20-22-B-07	15-Jul-22
Imidacloprid ^A	Imidacloprid 350 SC	TSA	17-20-D-24	20-23-D-35	06-Mar-23
	Imidacloprid 350 SC	Refiloe	18-21-D-91	21-24-D-36	19-Mar-24
	Imidacloprid 350 SL	CP Chemicals	18-21-D-47	21-24-D-95	09-Jul-24
	Tanrek 500 SC	Tiger Agro	N/A	21-22-D-104	29-Apr-22
	Gaucho 600 FS	Bayer	18-21-D-40	21-24-D-89	20-Apr-24
Imidacloprid ^A	Confidor 70 WG	Bayer	17-20-D-08	20-23-D-01	25-Jan-23
	Imidacloprid 70 WS	TSA	17-20-D-52	20-23-D-24	06-Mar-23
	Imidacloprid 70 WS	CP Chemicals	18-20-D-68	21-23-D-07	17-Nov-23
	Imidacloprid 70 WG	CP Chemicals	18-21-D-50	21-24-D-94	11-Jun-24
	Thunder	Bayer	17-20-D-66	20-23-D-62	03-Aug-23
Indoxacarb ⁶	Blanket	Pivotal	16-19-D-77	19-22-D-47	22-Jul-22
	Devacarb	Seedchain	N/A	19-21-D-56	11-Dec-22
	Indoxacarb 15 SC	Windmill	N/A	21-23-D-125	31-Jan-23
	Missile	TSA	18-21-D-28	21-24-D-55	18-Mar-24
	Steward 150 EC	Polachem	18-21-D-42	21-24-D-70	10-Jun-24
Indoxacarb + Acetamiprid ⁶	Indoxacarb 150 SC	CP Chemicals	18-21-D-66	21-24-D-100	09-Jul-24
	Aryna 46 EC	Polachem	17-19-D-34	19-22-D-57	04-Nov-22
	Attitude	Sineria	18-19-D-113	19-22-D-74	12-Jun-22
	Acclima 240 EC	Refiloe	N/A	21-24-D-47	15-Apr-24
	Lambda-cyhalothrin 50 EC	Refiloe	17-19-D-58	19-22-D-28	13-May-22
Lambda-cyhalothrin ^R	Lambda-cyhalothrin 50 EC	Magchem	N/A	19-22-D-39	02-Jun-22
	Lambda-cyhalothrin 5 EC	ZFC	18-19-D-05	19-22-D-52	16-Jul-22
	Fortis K	Polachem	17-19-D-15	19-22-D-69	29-Nov-22
	Karate Zion 5 EC	Syngenta	17-20-D-33	21-23-D-27	02-Mar-23
	Acol Lambda 5 EC	TSA	17-20-D-19	20-23-D-31	06-Mar-23
Trigger 5 EC	Trigger 5 EC	Sineria	17-20-D-79	20-23-D-75	06-Oct-23
	Lambda-cyhalothrin 50 EC	CP Chemicals	18-20-D-65	21-23-D-06	17-Nov-23
	Lambda-cyhalothrin	Adama	17-20-D-47	21-23-D-71	03-May-23
	Lambda-cyhalothrin	ATS	19-21-D-28	21-24-D-106	27-Aug-24
	Permethrin ⁶	Cropserve	N/A	21-22-D-02	10-Nov-22
Pymetrozine ⁶	Chess 50 WG	Syngenta	N/A	21-24-D-60	05-Jan-24
Tetraniliprole ⁶	Vayego 200 SC	Bayer	N/A	20-23-D-21	21-May-24
Thiacloprid ^A	Calypso 480 SC	Bayer	18-21-D-39	21-24-D-90	09-Jun-24
Thiamethoxam ⁶	Thiamex	Polachem	16-19-D-78	19-22-D-46	19-Aug-22
	Actara 25 WG	Syngenta	N/A	20-23-D-25	20-Mar-23
	Thiamethoxam 25WG	CP Chemicals	N/A	20-23-D-54	22-Apr-23
	Thiara	Pivotal Agro	N/A	21-24-D-98	22-Sep-24

* Please refer to the Flue-cured Tobacco Handbook Section I for rates and recommendations



NEMATOCIDES					
Ethylene Dibromide ^P	Edabrom	Fercochem	18-21-E-33	21-24-G-88	19-Jun-24
1,3 Dichloropropene ^P	Telone II	Polachem	18-21-E-18	21-24-E-19	09-Feb-24
Dazomet ^A	Basamid	Pivotal Agro	N/A	21-23-E-01	06-Oct-23
	Vaporize GR	Cropserve	N/A	20-23-E-70	28-Oct-23
	Serpent GR	Cropserve	19-21-E-04	21-24-E-64	13-Jun-24
Fenamiphos ^P	Fenamiphos 40 EC	Fercochem	19-22-E-11	22-25-E-01	03-Feb-25
	Fenamiphos 10 G	Fercochem	19-22-E-12	22-25-E-02	11-Jan-25
Metam Sodium ^P	Herbifume	Magchem	N/A	20-22-E-11	05-Apr-22
	Metam Sodium	Fercochem	N/A	20-23-E-84	15-Oct-23
	Metham Sodium 50 SL	TSA	18-21-E-37	21-24-E-53	18-Mar-24
Oxamyl ^P	Blockade 310SL	Polachem	17-19-E-06	19-22-E-31	09-April-22
	Blockade G	Polachem	18-21-E-46	21-24-E-68	06-Jul-24
	Oxamyl 310 SL	Refiloe	18-21-E-90	21-24-E-107	27-Sept-24
	Oxamyl 100 GR	Refiloe	18-21-E-89	21-24-E-108	27-Sept-24
	Oxamyl 310 SL	Mgchem	N/A	19-22-E-40	02-Jun-22
	Oxamyl	TSA	N/A	20-23-E-32	23-Jan-23
	Oxamyl 310 SL	CP Chemicals	N/A	20-23-E-41	25-May-23
	Vyten 10 GR	Cropserve	18-21-E-110	21-24-E-32	11-Apr-24
Fluopyram ^G	Velum 500 SC	Bayer	16-19-E-59	19-22-E-29	24-May-22
	Velum Prime 400 SC	Bayer	18-20-E-121	21-24-E-08	22-Jan-24

* Please refer to the Flue-cured Tobacco Handbook Section G for rates and recommendations

* Toxicity colour triangle code (G-Green, A-Amber, R-Red, P-Purple)

TABLE 2: AGROCHEMICALS WHICH HAVE BEEN DROPPED FROM THE LIST OF TOBACCO-APPROVED AGROCHEMICALS

ACTIVE INGREDIENT	CATEGORY
Aldicarb	Nematicide
Acephate	Insecticide
Fenvalerate	Insecticide
Methamidophos	Insecticide
Monocrotophos	Insecticide
Thiodicarb	Insecticide
Benomyl	Fungicide
Alachlor	Herbicide
Dimethenamid	Herbicide
Metolachlor	Herbicide
Trifluralin	Herbicide
Butralin	Growth Regulant
Chlorpyrifos	Insecticide
Methomyl	Insecticide
Pendimethalin	Suckercide

Sent by Kutsaga Seeds as a service to growers to ensure sustainable and responsible tobacco production.





CLIMATE CHANGE

Adaptation strategies' needed now as climate change shifts crop production:

Study Coffee beans, avocados and cashews are among the global staples affected. By James Gaines | Inside Science

Some countries that grow coffee, cashews and avocados will see the amount of land best suited to these crops shrink because of climate change, highlighting the need to plan adaptations now, according to new work published last week in the journal PLOS One.

The crops we eat depend on a variety of soil and climate conditions to grow, and climate change is expected to affect both temperature and rainfall in many areas around the world. Previous research has looked at how crops would be affected by these changes, and the findings spell trouble for some, including coffee.

To find out where the best growing conditions for coffee, cashews and avocados are today, environmental systems scientist Roman Grüter and his colleagues combined information about what conditions these crops prefer with maps of current climate data and different soil or land types. Then, by incorporating climate models, they predicted where conditions would improve and where they would decline. The final maps were precise enough that Grüter, affiliated with the Zurich University of Applied Sciences and an author of the new study, could zoom in to less than a square kilometer in resolution.

As earlier studies had suggested, the researchers found that the global area suitable for producing coffee will decrease. The new study was the first to look at cashews and avocados on a global scale, and it found that the areas suited to growing cashews may actually increase, while avocados are predicted to lose much of their best-suited land but may see an increase in areas of moderate suitability.

Beyond the global picture, however, Grüter's maps show how individual countries or areas - and the farmers who live there - may be affected. For example, Brazil may gain farmland well-suited for cashews while Venezuela may lose it. Meanwhile, most of the coffee-growing areas in Vietnam may decline in suitability, while China may see increases. Even within a country's borders, there may be shifts, including changes in the areas of Mexico best suited to avocados.

The crops in the study are important sources of income for farmers around the world, especially farmers with fewer than 5 acres of land. Many people may see their personal farms and livelihoods affected. Planning for how to adapt should start now, said Grüter. For instance, countries could try to help smallholder farmers by breeding or planting new varieties adapted for higher temperatures or drought.



CLIMATE CHANGE

"I think it's important to invest not only in modeling, but also now really invest in adaptation strategies," said Grüter. He said he also thinks countries should include the affected farmers in decision-making. "Take the farmers on board from the beginning," he said.

Source - Inside Science

Inside Science is an editorially independent nonprofit print, electronic and video journalism news service owned and operated by the American Institute of Physics



AGRICULTURE ECONOMICS



African markets are more than meeting places for buyers, sellers

By Charles Dhewa

Contrary to the formal definition of a market as a meeting place for buyers and sellers, an African market is more than a physical meeting place for farmers and traders. Some of its most important roles include food distribution, supporting rural development and ensuring nutrition gets to low-income populations who would otherwise be excluded from supermarkets and other elite food sources.

Besides confirming that there is nothing super about supermarkets for the majority of smallholder farmers and low-income consumers, COVID19 has broadened the definition of an African food market by showing the extent to which these markets have sustained food distribution under restrictions like lockdowns. African markets are where other actors like processors get commodities for value addition and vendors get what they want for their consumers in residential areas. It is not just about buyers and sellers meeting to exchange goods and services.

The power of mapping food systems

Due to the shifting nature of African markets, mapping food distribution systems has become the best way of identifying the true meaning of a market in the African sense. The same way companies have information about their stocks, schools have registers of students and government departments have detailed information of who is doing what, African markets should have all their details intentionally captured. When that is done, it becomes easy to know who is who among farmers, traders, transporters, processors and many other actors including their profiles.

The fact that huge information gaps still exist means African policy makers are still far from understanding their economies. For instance, persistent demolition of mass market structures and chasing away of vendors as if they are criminals illustrates the extent to which policy makers have largely excluded and orphaned these institutions from national development plans. Markets can exist in municipal master plans but they do not exist on the ground.

Chasing away enterprises

By chasing away vendors and traders, African governments are unknowingly destroying enterprises on which the majority depend for food and income. It seems African policy makers are still trapped in the colonial settlements mind set which is about scrambling for physical space rather than the ambition space of the majority of entrepreneurs who do not need too in the form of colonial designs like shopping malls and supermarkets.

As demonstrated by African food markets, most enterprises are now so networked that there is no need for voluminous spaces since the movement of commodities has become too fluid. African policy makers are still stuck with supermarket models where a single warehouse can be selling commodities from more than 100 companies. On the contrary, the same space occupied by a supermarket can accommodate commodities from more than 1000 farmers, 500 vendors and 500 traders in African markets, translating to more than 2000 entrepreneurs.

Everybody knows that the role of farmers is to farm and the role of traders is to trade but what is missing is a thorough understanding of their enterprises including issues around distribution. This is critical in showing the reach out of African food markets. For instance, the extent to which small actors reaching out to consumers in marginalized communities and what are the gaps? If food distribution from markets is not going beyond 200km from urban centres, how are consumers staying beyond that reach getting their nutrition? If oranges from Harare are not getting to Binga, how are consumers in Binga getting alternative vitamins equivalent to match what would have been provided by oranges?

The market as a vantage point

Unless researchers use African markets to get to the centre of food supply chains, they will miss critical elements about these important institutions. That is where the researchers can see what is happening from all angles including who is at the bottom of the supply chain as well as which food producers are positively or negatively affected by the supply chain. For instance, subsistence farmers who do not visit markets may have different challenges. It is also along the supply chain one can identify traders who are the best at providing information on how they interact with farmers and consumers including other hidden barriers. On the tail of the supply chain, researchers can see end- users or consumers who are very influential in informing the supply chain about what to produce, for whom and appropriate costs within which products should reach the market. Affordability is revealed in the market – e.g., the extent to which a bundle of vegetables can be afforded if its price goes beyond USD5.

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Kenyan nutritious instant meal company targets the mass market

As Kenyan consumers become more health conscious, NatureLock, a Nairobi-based instant meal company, is looking to address the gap in the market for quick, healthy food at a price point affordable to the mass market.

“We felt our purpose was to commercially develop a manufacturing process to sell healthy, convenient and affordable food to as many people as possible,” explains Tei Mukunya Oundo, CEO of the company founded in 2020.

The first product NatureLock created is an instant stew called StewsDay Ndengu. This local dish is traditionally prepared using mung beans (otherwise known as green gram), tomatoes and onions. The stew is cooked, dried and packaged into 45g packs to be sold in local shops in Kenya at around US\$ 0.3 a packet. Customers are instructed to add boiling water to the dry flakes to create a hot stew, meant to be eaten with rice or chapati.

Creating the market

As healthy instant meals are not yet common in Kenya, NatureLock has had to build its market from the ground up. Its strategy has been to launch a marketing campaign in a specific area of Nairobi known as Eastlands. Selling the packet stews in local shops and on street corners, the company has put advertisements on billboards in the area to try and familiarise customers with the product.

“We started with Eastlands where we can gauge what works and what doesn’t. We have got to learn how it is accepted, to learn what the tactics are for selling such a product,” Oundo says.

The businesswoman – who previously founded a company that manufactured dried fruit snacks – reveals NatureLock is working with influencers on social media to generate a buzz about the new product and create brand loyalty. The company has also placed adverts on local TV and radio.



She adds that the response has been favourable as Kenyan consumers are increasingly looking for 'made-in-Kenya' and nutritious products. The test run in Nairobi will inform the strategy for expansion into other parts of Kenya and beyond.

NatureLock currently manufactures around 3,000 packets of ndengu stew a day, which it expects will increase as it has priced the product for the mass market.

"There are a lot of opportunities here. It will take time to exhaust the Kenyan marketplace because it is a big market within East Africa. The sky is the limit." According to Oundo, the next step is to get the product in supermarkets like Naivas, Quickmart, Chandarana and Carrefour.

The manufacturing process

NatureLock sources raw materials from farmers across Kenya to ensure all the ingredients in the stews are local. It works with around 1,000 vegetable and 5,000 mung bean farmers. The ingredients are collected and transported to the factory on the outskirts of Nairobi, a space where the product development team can design and test new recipes.

Oundo says the team is constantly reaching out to consumers to try new flavours in what she calls "focus groups". A key selling point that separates NatureLock from its competitors, she adds, is that the brand does not contain any additives or preservatives.

"It is important that it is fully nutritious. Only once we are happy with the product, do we look to produce it in large quantities," she explains. At the moment, the company is experimenting with beans, fish and other legumes to make more instant meals.

Although the ndengu stew is currently sold as a meal to be prepared at home, NatureLock is hoping to build a team of street vendors who will sell the ready-to-eat stew to Nairobi's commuters.

The one potential headwind is that Kenyans' purchasing power has declined during Covid-19 and the subsequent economic downturn. The economy also looks set for a slowdown as an election looms later this year. Despite the potential for a disruptive voting period, however, Oundo is confident sales will remain steady. She believes worried consumers will stock up on NatureLock's products before the vote.

Growth expectations

The company is hoping to expand into Uganda and Tanzania by the end of 2022, two markets with broad similarities to Kenya.

"As we grow, our trajectory looks like 20% to 30% growth each year, and as we scale up into more products and markets, this should increase," Oundo says.

Source – www.howwemadeitinafrica.com





How Bitcoin Contributions Funded a \$1.4M Solar Installation in Zimbabwe

The long-running Sun Exchange has a pitch for environmentally conscious bitcoiners.

By Ian Allison (CoinDesk)

Nhimbe Fresh's new solar panels (Sun Exchange)

South Africa's Sun Exchange, a solar power investing community that uses bitcoin (BTC) to raise capital and to make payments to its investors, says it has completed the highest value crowdsourced project of any kind in Africa.

The Nhimbe Fresh project in Zimbabwe, a grower of berries and vegetables comprising 250 smallholder farmers, raised funds for about \$1.4 million worth of solar cells, bought by more than 1,905 individuals across 98 countries, with most of them transacting in bitcoin.



Sun Exchange deployed the first bitcoin-funded solar project back in 2016, which was presented at CoinDesk's Consensus event in New York that year. Sun Exchange has now funded more than 50 solar projects, raising over \$9 million, and it's one of the few ambitious projects from the early days to still be around and thriving.

"These projects are mainly in schools, farms, supermarkets and retirement homes, many of them in South Africa," Sun Exchange founder Abe Cambridge said in an interview. **"These are organizations which otherwise wouldn't have the capital available to build their solar plant, nor would they really want to go and raise debt."**

'Virtuous spiral'

Sun Exchange's proposition provides a baked-in carbon offsetting component for environmentally conscious bitcoiners. (Projects like Filecoin Green have been looking at ways to meld carbon offsetting into crypto.)

In fact, there are parallel philosophies of democratization behind both cryptocurrency and solar, enabling access to finance and energy, Cambridge said.

"A beautiful sort of virtuous spiral happens when you invest bitcoin into solar," Cambridge said. **"It takes about 320 megawatt hours of electricity to mine one bitcoin. But when you use that bitcoin to buy into solar energy, those generation assets you've just purchased with your one bitcoin will produce 3.6 gigawatt hours. So, over 10 times more energy."**

Sun Exchange allows any investor to own solar power assets, which are typically panels on roofs, which then earn back a yield over a 20-year lease period. The yield is around 11% in South African rand (ZAR), which is then converted into bitcoin for payment to the wallets of international investors.

A system of dollar cost averaging, a way of smoothing out bitcoin's price volatility by buying the cryptocurrency over time, is employed by the project to boost contributors' yield potential.

"BTC payouts are done monthly against the spot ZAR/BTC price at the time. So if BTC price drops by half one month, you would earn twice as much BTC over that if the BTC price had stayed the same as the prior month. As the BTC price recovers, that price gain acts to boost the value of accumulated BTC," a Sun Exchange spokeswoman told CoinDesk by email.

And there are other virtuous elements in this circle, such as the hardening of energy security, reliability and access in emerging markets, Cambridge said. The Zimbabwe project has a battery storage element in case of any vagaries relating to the national grid, while South Africa, where many of the platform's solar projects are based, experiences periodic rolling blackouts.

Sun Exchange also recently kicked off the crowdsale for the Karoo Fresh project, the first system to be completely off-grid.

"For me, it seems like a tragic waste of energy if the value of bitcoin is not put to good use like this," Cambridge said. **"The fact that we actually built a portal to help unlock that value and good which bitcoin can do is I think why we've got the traction in the market that we have."**

DISCLOSURE

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Ian Allison is a senior reporter at CoinDesk.

Follow @IanAllison123 on Twitter

Source - <https://www.coindesk.com/>





UNPACKING PROBLEMS OF MUDDY CONDITIONS IN BEEF PRODUCTION

By General Beven Mundida

Muddy conditions can compromise the health of livestock. These conditions can be frustrating for the farmer and the cattle. Managing mud and manure in livestock areas does not have to be a dirty job. If not managed well they can cause serious health problems to animals and increase the cost of production. Challenges associated with mud on the cattle farms need to be unpacked to ensure the environment is not detrimental to animal health and performance.

Usually during wet seasons cattle are stressed because the wet hair coat loses its insulating quality and cattle suffer more stress in wet cold weather than in dry cold weather. Under dry conditions, the hair is fluffy and has tiny air spaces between each hair, holding a layer of warmer air next to the body. A good clean hair coat can keep cattle warm even when temperatures drop. When the hair becomes wet, however, it lies down flatter and loses this insulating layer of air.

If cattle must lie in mud, the hair becomes muddy and matted and also loses its insulating quality. Cattle chill more readily and this stress can lead to illness, stress inhibiting the immune system and makes cattle more vulnerable to diseases. If they must stand in deep mud, this situation is also a stress. This makes it harder for animals to keep warm when standing in cold mud.

Some problems of mud environments to calves

Muddy environments harbor bacteria and other pathogens, especially from manure which can affect cattle health. Mostly a mix of manure and mud in cattle pens/kraals can lead to dirty udders. So if the newborn calves suckles, they ingest bacteria along with the colostrum. It's a race between the antibodies from colostrum and the pathogens, and if they nuzzles a dirty udder (or makes a few false tries on the cow's dirty flank or brisket before finding a teat) the pathogens can win. Some of these bacteria can then cause deadly scours in newborn calves. Generally a dry ground is always a safer environment for calves than muddy environments because calves are less apt to pick up scour-causing bacteria or the toxin forming bacteria that cause and often fatal intestinal infections.

Calves born on wet, muddy ground are also more vulnerable to naval ill or joint ill. If the umbilical stump comes into contact with contaminated ground before it dries and seals off, it offers an open doorway for pathogenic bacteria. A calf born in the mud may need antibiotics as well as intensive disinfecting of the navel stump (applying iodine or some other good disinfectant several times) until the stump is completely dry. Infection may localize at the navel or may enter the bloodstream and cause septicemia. In the latter instance, the bacteria may attack various organs and create a potentially fatal infection or may localize in certain areas such as the joints, to permanently cripple the calf.

Protozoan pathogens also lurk in mud wherever there have been Coccidia and cryptosporidia can also be spread via

manure. These infections are always more common in calves during wet conditions. Whenever cattle are concentrated in small areas, coming into contact with manure, they are more vulnerable to massive infection with these protozoa especially calves, because they have not yet developed any immunity or resistance and because they often nibble dirt or mud or pick up the pathogens when nursing a dirty udder. If cattle must lie on contaminated ground, such as mud mixed with manure, the hair coat becomes dirty also, and calves pick up the pathogens when licking and grooming themselves.



cattle.

Common problems for all cattle

Some bacteria that lurk in mud and wet manure include the pathogens that cause foot rot in cattle. Foot rot is an infectious condition that causes inflammation in the foot, resulting in severe lameness. The swelling and lameness develop very suddenly. One day the animal is fine and the next day the foot is so sore the animal may not put any weight on it.

There are several bacteria that can cause foot rot so farmers have to take care of their animals. After the bacteria gain entrance to the foot, inflammation and swelling start quickly. Usually the swelling is around the coronary band above the hoof, between the toes or at the heel, depending on the site of entry. The swelling may spread toes on the affected foot apart. The enlargement may include the area above the hoof, extending upward past the fetlock joint in some cases. In severe cases the animal will have a fever (which may cause temporary infertility in a bull – that temporary infertility is a big loss to serious farmers).

Wet areas, where cattle must walk through mud or swamp areas or stand in mud in a pen/kraal, are the most likely places to pick it up. Foot rot can occur at any time, but prevalence is always higher during rainy seasons or in wet, muddy environments. Also, the skin of the feet becomes softer and more-tender when wet and more easily nicked and scraped, so foot rot is very common in rainy season or in situations when cattle walk through or stays in muddy environments.

Lameness may hinder ability of walking to feed and water or reduce the amount of time the animal spends grazing. The animal may spend most of its time lying down and lose weight. The swelling in the foot usually breaks open, often between the toes or the heel, and discharges pus after a few days. This drainage will further contaminate the pen/kraal putting other animals at risk for foot rot, and calves at risk for navel ill (since the same bacteria is often involved in navel infection). Many cases of foot rot will eventually clear up on their own without treatment, but the animal will be lame longer and may spread the bacteria around the pen or pasture for the whole time the foot is swollen and discharging.

It is always healthier to treat the problem rather than wait to see if it will get better. If a farmer can clear it up quickly, there will be less contamination and much less risk of permanent damage to the hooves. At times if neglected, the infection may eventually get into the joint, causing infectious arthritis.

Sometimes cattle can also pick up infections if there is a break in the skin putting them at risk. Last but not least muddy pens are common in rainy season which is also the time when tick borne diseases are common. Once the animals are stressed and the immune system is weak animals get tick borne diseases and others which are common in summer.

How farmers can minimize mud problems

Anything a farmer can do to minimize mud and dirty conditions in cattle lots and pastures can help decrease the incidence of problems. During calving season farmers should periodically move the calving cows to clean dry ground, or extra bedding (hay bales/mashanga) should be used in the calving pen (with more put in as needed) to cover the mud and keep the cows from becoming wet and muddy.

Farmers can minimize the incidences of foot rot if they keep the pens/kraals clean and dry, and free of sharp stones or dried lumps of manure (which create rough ground that may cause hoof injuries). Covering the ground with deep mud using straw and mashanga can be helpful in preventing foot rot.

For farmers into feedlotting (confining cattle in a relatively small area (the feed lot) and feeding a controlled high energy diet over a certain period of time) thorough cleaning of pens can often avoid infections in feedlots. Some farmers often liberally sprinkle lime over the pen surface and rest them for at least a week after removing cattle to avoid infections in feedlots.

Maximizing drainage in pens is also essential to good cattle management and will also help prevent constant contact with manure-laden mud.

Some farmers can use a good prevention measure in pens by creating mounds or built-up humps of soil or bedding where cattle can be on dry ground (but this should be always monitored).

For farmers who can afford concrete slabs by feed bunks or feeders can also give cattle a dry place to stand, especially if these are kept cleaned off periodically. Additionally the use of concrete around watering areas and feed bunks where animals congregate can be very helpful, minimizing contact with mud.

A three pen rotational system is also very important if farmers want to effectively deal with mud conditions. Animals can be rotated within pens and one among the three should be on standby for the sick animals (sick pen).

Annual cleaning of the pens/kraals is also paramount. It is essential that pens surfaces are cleaned annually, with any manure or undigested materials removed from the pen and firm hard-clay surfaces remain. Undigested material, largely in the form of fiber, tends to have a high water holding capacity. These materials will significantly contribute to mud problems by not allowing the surface to dry as fast as they could, plus they may prevent water from running out of the pen.

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Nutritional diseases



Nutrition and Health; A synergistic relationship

By Angeline Zengeya

Oral health is a primary predictor of health, nutrition, and overall quality of life. Diseases and conditions affecting the mouth and face disrupt vital functions such as chewing, swallowing, speaking and sleeping. They can have adverse effects on one's quality of life, social relations, ability to communicate and self-esteem.

Nutrition and the integrity of the oral cavity have a synergistic relationship in health and disease. Diet impacts the integrity of teeth, oral tissues, bone and other supporting structures, while oral health influences how food is consumed. Poor nutrition and diet may affect the development of the oral cavity and the progression of oral diseases through impaired tissue regeneration and healing and cause bleeding gums, xerostomia, dental caries, and increase susceptibility to oral infections.

Some of the most influential nutrients during growth and development of teeth are Vitamins A, C, D calcium, phosphorous, protein and fluoride. An insufficient supply of vitamins and minerals pre-conception, can negatively impact the growth of the maxilla and skull, while inadequate intake of the macronutrients affects the development of the dental hard tissues, occlusion, connective tissue and defective enamel formation (dental hypoplasia).

Tooth decay or dental caries or cavities poses a particular challenge with almost 100% of adults and 60-90% of children being affected. Dental caries is demineralization of the inorganic part of the tooth with the dissolution of the organic substance. This is caused by organic acids that form in the dental plaque because of bacterial activity, through the anaerobic metabolism of sugars found in the diet. Other food factors that may hinder or enhance caries development include: the frequency of eating, the physical form of the carbohydrate (liquid vs solid); retentiveness of a food on the tooth surface; the sequence in which foods are consumed (for example; cheese eaten before a sweet food limits the pH drop), and the presence of minerals in a food.

Malnutrition can also increase the risk of dental caries by affecting the salivary glands so that the flow rate is reduced and the composition of saliva changed.

Periodontitis is a ubiquitous chronic inflammatory disease affecting the supporting structures of the teeth. The most important risk factor in the development of periodontal disease is represented by inadequate oral hygiene.

Dental erosion is progressive irreversible loss of dental tissues which are chemically eroded resulting from recurrent exposure to a low pH in the mouth. This is due to intrinsic factors (i.e. acid reflux). Risk factors included are eating disorders which are largely presented by vomiting, gastro-esophageal reflux disease and a low salivary flow rate. Or extrinsic factors (i.e. excessive consumption of acidic foods and drinks). Examples are fruit and fruit juices, sodas, fruit teas, and wine.

Poor oral function due to edentulism, ill-fitting prostheses and oral disease compromises overall nutrition through altered food choices and food preparation. People with poor oral health status can, as a consequence, suffer from impaired intake of fruit and vegetables, dietary fibre and some key nutrients. They may overcook or over-prepare fresh foods to make them easier to eat, therefore compromising the nutritional quality of food.

Immunocompromised patients, such as those with cancer, including oral cancers or AIDS, often have increased requirements for nutrients in the face of major physiologic and psychosocial impediments to eating. It is important to effectively coordinate dental care with total care.

Eating a healthy diet is beneficial for dental health. The nutritional implications in dental conditions are many and complex, therefore no longer can nutrition in dentistry be summarized as "**sugar is bad and fluoride is good**".

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