

## OPINION

### Winter And Lice Infestation In Cattle



Hafiz M.Zohaib

There is a seasonal pattern in the occurrence of lice infestation in cattle, with populations tending to build in the cooler months of the year and decline during the hot summer.

Lice are small, dorsoventrally flat-bodied skin parasites with legs modified for grasping hairs. They are very specific to the host. Cattle louse can only parasitize cattle and is unable to survive on another host for more than a day or two. In the winter, lice infestation in cattle is common. The cooler skin and winter coat favor the attachment of lice to the skin.

Lice are of two types: sucking louse and biting louse, sometimes also known as chewing louse.

As the name indicates, the sucking louse suckles the blood of the host by piercing through the skin, while the biting louse gets its feed by biting skin debris, hair, and oily secretions.

Both the sucking and biting louses are important from an animal welfare point of view, as they are a continuous source of irritation and nuisance to the cattle.

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### Biofeedback, A Way To Manage Stress



Sabahat Zaineb

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## Arzish Azam Represents Promise Of Pakistan At LEAP Tech Event

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Arzish Azam was invited to speak at LEAP, the world's largest tech event, in Saudi Arabia due to the successful signing of 50 MoUs worth \$100 million and the announcement of the Saudi-Pak Tech House to create 1,000 jobs and projects worth \$100 million.

On the eve of Future Fest, His Royal Highness Prince Fahad bin Mansour Al Saud announced plans to launch the Saudi-Pak Tech House in order

to generate 1,000 jobs and projects worth \$100 million. Twenty Saudi Arabian companies attended Future Fest 2023 in Pakistan in January.

Arzish Azam said during his panel discussion, "Facilitating Market Linkages to Catalyze Expansion and Growth of Businesses: The Saudi-Pakistan Experience," that "talent is everywhere, but opportunities are not, which is why we do Future Fest to enable the talent of this region to become a part of the global knowledge economy."

Out of the 700+ speakers from around the world who spoke at LEAP the world's

largest tech event, Arzish represented the "promise of Pakistan" and explained how Ejad Labs and Future Fest are essential in creating market connections and providing opportunities for partnerships and network expansion to foreign companies in Pakistan.

Mohammad S. Almadani, Co-founder & CEO at Classera, and Ayman Hamdan, VP Corporate Affairs at Unifonic and CEO of UnifonicX,

were among the speakers from prominent Saudi corporations on the panel, which was moderated by Abdel Karim Samakie, Innovation-Driven Enterprises Director at the

Digital Cooperation Organization.

Top Saudi businesses represented in the delegation included Unifonic, Noon, Salasa, Mozn, Qoyod, [atm], Nana, Saudi AZM, AlGooru, Hala, Salla, Moyasar, Classera, Squadio, Nama Ventures, Tracking, Takadao, Torod, ILSA Interactive, Diggipacks, and Derayah.DCO served as the delegation's digital enablement partner.

More than 60,000 people attended Future Fest 2023, and 150 B2B meetings between Saudi Arabian and Pakistani businesses were organized to look for synergies...[Read More](#)

### Soliton Group Chairman Meets President To Uplift Economy Of Pakistan

Dr. Khan is dedicated to advancing Pakistan's economy through the various divisions of the Soliton Group of Companies, where he serves as chairman.

The Chairman of the Soliton Group of Companies, Dr. Mansoor Khan, recently met with the President of Pakistan. The Soliton Group of Companies includes Soliton Technologies, the Soliton Foundation (a welfare organisation), and Soliton Ventures (a capital investment firm). The meeting's main focus was on how important technology, in particular AI, is to boosting economy of Pakistan and rescuing it from its current crisis.

Dr. Khan is dedicated to advancing Pakistan's economy through the various divisions of the Soliton Group of Companies, where he serves as chairman. He stressed during the meeting how artificial intelligence has the potential to boost export growth by helping international clients automate processes, cut costs, and increase efficiencies.

Dr. Khan spoke about the company's AI initiatives and its experience exporting IT services for the healthcare industry since 2005 during the meeting.

The chairman also brought up the issue of talent loss to other nations and brain drain. The challenges that the IT sector faces in terms of business management and continuity were also discussed, as were the steps that must be taken to guarantee business continuity in the event of default or other unfavourable circumstances.

This includes the requirement for backup plans in the event that internet connectivity is interrupted. The Soliton Group is dedicated to cooperating with the government of Pakistan to encourage...[Read More](#)

## Govt Commits To Modernize Pakistan's Engineering Universities



Government is committed to modernize engineering universities in order to establish them as global brands, according to Federal minister for planning, development & special initiatives.

The government of Pakistan is

committed to modernize engineering universities in order to establish them as global brands, according to the federal minister for planning, development, and special initiatives.

Speaking on Friday at NED University of Engineer &

Technology's Academic Block, Fire Laboratory, and Department of Computer & Information Systems Engineering dedication ceremonies, the Federal Minister said that while the government could provide infrastructure, it was the faculty and students who brought revolution through their innovation.

He claimed that the entire paradigm of progress and development had been altered globally by industrialization.

The federal minister's statement highlights the government's commitment to promoting the development of science and technology in Pakistan, and to ensuring that engineering universities...[Read More](#)

## World Celebrates Int'l Day Of Women And Girls In Science

The world celebrated the International Day of Women and Girls in Science on February 11 (Saturday), including Pakistan.

The world celebrated the International Day of Women and Girls in Science on February 11 (Saturday), including Pakistan, with the goal of ensuring that women and girls have full and equal access to and participation in science.

The Day focuses on the idea that gender equality and science are both essential for achieving the internationally recognized development objectives, such as the 2030 Agenda for Sustainable Development.

The likelihood of female students earning a bachelor's

degree in science is 18%, compared to the male equivalent of 37%, according to a UN study from 14 countries. Even though they make up half of the world's population, women are still not

allowed to fully participate in the economy, according to the resolution.

Women also have a crucial role to play and a right to be involved in sustainable development poli-



cies, programs, and decision-making at all levels. The phrase "science, technology, engineering, and math" (STEM) is frequently used to refer to the academic fields of science.

In a blended learning setting, STEM education begins with young students, and the course material demonstrates to students how the scientific method can be used in daily life. It frequently aims to draw in women and young girls. The main goal of STEM education is to equip students with the knowledge and skills they need to thrive in a rapidly changing technological landscape. By learning about science, technology, engineering, and mathematics...[Read More](#)

### Tariq Malik To Lead UN Committee On Pakistan's Digital Transformation

The UN's committee on digital transformation in Pakistan has been given the chairman of the National Database and Registration Authority (NADRA) as its head.

Muhammad Tariq Malik will preside over the Technical Advisory Committee for the National Human Development Report 2023 on Digital Transformation in Pakistan, the United Nations Development Programme (UNDP) has announced.

Knut Otsby, the UNDP representative in Pakistan, will co-chair the committee. The advisory committee is made up of 27 eminent professionals from the fields of finance, law, governance, and information technology.

In the past, Mr. Malik was also associated with the UNDP. In his capacity as chief technical advisor, he assisted over 130 states in using technological interventions to improve governance in using technological interventions to improve governance.

According to his biography on National Database and Registration Authority NADRA's website, he worked as the World Bank's senior technical consultant before joining the UNDP.

Using digital technologies, Mr. Malik has launched a number of initiatives to deal with the fallout from crises, pandemics, and disasters. He took the lead in organizing the flood victims' data for efficient relief efforts and fair aid distribution.

He had won awards on the national and international levels thanks to his initiatives. He received the highest honor





## Pakistan's IT Industry To Benefit From Opportunities In Saudi Arabia



Ameer Khurram Rathore discussed the approach of looking for benefits for IT Industry in Pakistan under Saudi Arabia's Vision 2030 strategy.

Pakistan has created a joint product development strategy to benefit from the opportunities in IT Industry provided by Saudi Arabia's Vision 2030 and the nation's rapid information technology advancement (IT).

Ameer Khurram Rathore, the ambassador of Pakistan to Saudi Arabia, spoke exclusively to the media on the occasion of Technology Convention LEAP after attending the Digital Cooperation Organisation (DCO) meeting in Riyadh. He discussed the approach of looking for benefits for IT Industry of Pakistan under Saudi Arabia's Vision 2030 strategy.

The Pakistani ambassador emphasised that joint product development, rather than IT exports, is the basis for Pakistan's strategy to take advantage of opportunities provided by Saudi Arabia's Vision 2030.

He added that "the strategy of joint development will help Pakistan deal with the challenges posed by Saudi Arabia's Saudisation policy and at the same time, Pakistan will be able to play its role in the development of Saudi Arabia."

Pakistan has a skilled workforce with IT skills and is eager to build on its long-standing relationship with the Kingdom to reap lasting benefits for future generations, according to Rathore. "While Saudi Arabia has the necessary resources to buy IT products from any country in the world, Pakistan has a talented workforce with IT skills," he added.

He explained that a Resource Augmentation Center with skilled and talented labour will be established in Pakistan in order to carry out cooperation in the IT sector with Saudi Arabia. On the basis of projects, this pool of IT experts and gifted youth will meet the needs.

The IT industry in Pakistan has been growing rapidly in recent years, driven by the increasing adoption of technology and the availability of a large pool of talented and skilled workers.

Pakistan has a large pool of educated and tech-savvy individuals, and the government has taken steps to support the growth of the IT industry by providing tax incentives, subsidies, and other forms of support to local businesses. As a result, the IT industry in Pakistan is thriving and is expected to continue to grow in the coming years.

## ZONG Prepaid IDD Bundles Now Available On Online Platforms

**ZONG IDD BUNDLES**  
Now available on easypaisa

Bundle Name	Description	Recharge Amount (PKR)	Minutes	Validity (Days)
Support Sign	USA Canada/China	50	50	1
IDD Pakistan Bundle	Holistic	35	15	1
Saudi Arabia Mobile Bundle	Saudi Arabia Mobile Network	158	15	7
IDD UAE Bundle	UAE (UAE Network)	275	30	30
UAE China Friendship Bundle	China	368	120	7

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ZONG 4G  
LET'S GET DIGITAL

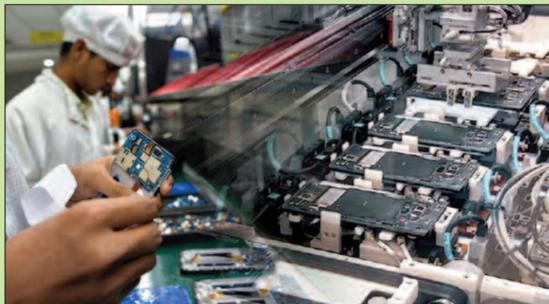
ZONG's customer-centric approach always results in the introduction of fresh, cutting-edge ideas for making life easier for all of its subscribers.

The leader in telecoms in Pakistan, ZONG, has made its prepaid IDD bundles accessible on well-known and frequently used online platforms like PayMax, EasyPaisa, Daraz, Nayapay, Oneload, and Internet Banking Apps.

ZONG's customer-centric approach always results in the introduction of fresh, cutting-edge ideas for making life easier for all of its subscribers. ZONG4G is carrying on its tradition of providing its customers with fresh, intriguing offers.

ZONG offers prepaid International Direct Dialing (IDD) bundles make it easier for customers to make international calls at affordable rates. The online platform provides a convenient and quick way to purchase these bundles without having to visit a physical store or call customer service...[Read More](#)

## NSU's Mobile Repairing Course For Students Concluded Successfully



A mobile repairing course that National Skills University (NSU) provided to students so they could compete globally in digital technology has come to an end.

"We are thrilled to have finished the course for mobile phone repair technicians because it will not only help us start our own businesses but also prepare us for the demands of the digital age," said the group of students. "While some of us work in mobile phone e-marketing, the majority of us run our own businesses by opening repair shops for mobile phones. Thank you, NSU, for providing us with education that improved our lives and enabled us to earn more money...[Read More](#)

## Embracing Blue Economy Model Needs To Focus On Climate Adaptation

The Minister emphasised that marine life and aquaculture are seriously threatened by the extremely stressed state of ocean ecosystems.

The Federal Minister for Climate Change stated at the Pakistan International Maritime Expo & Conference, hosted by the National Institute of Maritime Affairs, "Turning to the Blue Economy is the key to finding a sustainable economic model for Pakistan, but we must focus on climate adaptation and mitigation as climate change and plastic pollution are stressing and choking our oceans and seas, challenging our ability to embrace the Blue Economy."

The Minister remarked, "We are in a dangerous decade because the pace of global warming has accelerated during this time. Science informs us that this accelerated pace of change is much faster than previously predicted, so we will experience it disproportionately."

"Because we are not on track

to keep the planet's temperature below 1.5C as promised by the Paris Agreement, sea levels will be rising much faster. If things continue as they are, global warming will reach 2.8 or even 3 degrees by the turn of the century. We in the most vulnerable countries on the front lines will have experienced the burn much sooner than anyone else by that time."

The Minister emphasised that

marine life and aquaculture are seriously threatened by the extremely stressed state of ocean ecosystems. "Through the oceans, every ecosystem is completely interconnected. There are currently 400 dead zones in the world's oceans, and as one ecosystem fails, another will follow, eventually affecting us as well."

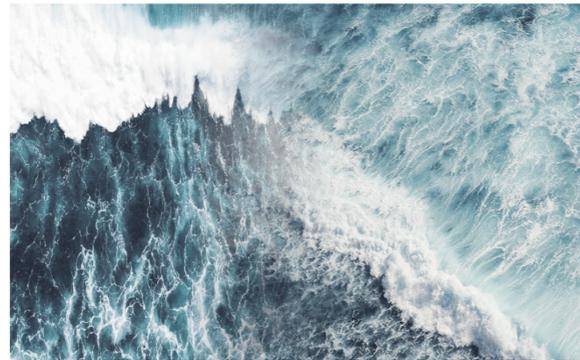
"The ocean serves as a conveyor belt for streams that control

our seasons, and once those begin to slow down, we will face a serious crisis that will have an impact not only on marine life but also on life on land," the minister said.

Since they have absorbed 90% of carbon emissions over the past 50 years, the oceans, according to the minister, are the largest carbon sinks in the world.

"As the world's largest carbon sink, our oceans are taking in more and more carbon dioxide from the atmosphere, which is causing the oceans to become increasingly acidic. Scientists warn that if emissions continue to rise, the Arctic could begin to melt as early as 2040. "Once the Arctic is no longer covered in ice, all tipping points will be reached," stated the Minister.

She continued, "Civilizations have used the oceans for conquests and for commerce, but now we judge the oceans based on their capacity to be a carbon sink and as the engine of a blue economy...[Read More](#)



## Minister Disappoints With TEVTA Employees' Salary Stoppage

The KP Caretaker Minister for Revenue, Industries, Commerce & Technical Education expressed disappointment over recent suspension of funds & salaries for TEVTA employees.

The KP Caretaker Minister for Revenue, Industries, Commerce, and Technical Education expressed disappointment over the recent suspension of funds and salaries for TEVTA (Technical Education and Vocational Training Authority) employees.

He pledged that he would work sincerely to get the staff's salaries and funds released as soon as possible. He clarified, however, that TEVTA had to develop into a successful and self-sustaining entity that depended on the labour of its own staff rather than becoming a burden on the public exchequer.

He was speaking at a Civil Secretariat Peshawar briefing on the performance of TEVTA. On this occasion, Prof. Abdul Ghaffar, the managing director of TEVTA, announced that 106 technical education and voca-



tional training centres operated by TEVTA are located throughout the province and provide technical education and training to thousands of male and female students each year.

The caretaker minister praised TEVTA's overall performance and stated that the importance of technical education is something that many countries have paid attention to in order to reach their pinnacle of prosperity and development.

He added that organisations like TEVTA could only succeed

if their results and gains outweighed their expenses. But regrettably, he pointed out, just like in so many other fields, the development wheel is turning upside down here as well.

He regretted that while TEVTA was rightly expected to provide jobs for its graduating students in accordance with market demand, the situation would be very different if it began collecting information on the employment of its students in the pertinent fields, as many of its young people...[Read More](#)

## COMSTEC Grants Rs 52.65m For Research Projects & Fellowships

Fellowships of three to ten months have been awarded to researchers from Cameroon, Iran, Iraq, Nigeria, Sudan, and Tunisia.

Five research grants and six fellowships totaling 52.65 million rupees were jointly funded by COMSTEC and the International Centre for Genetic Engineering and Biotechnology (ICGEB), Trieste, Italy. They were awarded to researchers from OIC member states.

Fellowships of three to ten months have been awarded to researchers from Cameroon, Iran, Iraq, Nigeria, Sudan, and Tunisia.

They will be hosted by Hungary, South Africa, Saudi Arabia, Algeria, and Italy. Researchers from Algeria, Iran, Kuwait, Malaysia, and Pakistan who submitted research projects have each received grants totaling 20,000 euros.

The research projects include: New 4-substituted Pyrazolidine and Isoxazolidine as potential antimicrobial agents; Overexpression...[Read More](#)

## Pakistan Museum In Islamabad Preserves 1.5M Specimens

Despite making a significant contribution to identification of natural history, and research activities in our nation, PMNH does not receive the respect it deserves from the authorities.

The Pakistan Museum for Natural History (PMNH) in Islamabad, which is run by the Pakistan Science Foundation (PSF), is the only museum that has preserved the 1.5 million specimens of priceless natural resources amassed from all over the country.

The museum saw 7218 visitors in November 2022, 13910 in October, 11530 in September, 15643 in August, 23,761 in July, 18,121 in June, 19,656 in May, 2351 in April, 11912 in March, 14577 in February, and 18737 in January.

Through 86,587 visitors, the museum earned Rs. 6,398,755 in revenue for the fiscal year 2021-2022, the Acting Director General of PMNH, Dr. Saima Huma Tanveer informed.

Despite making a significant contribution to the collection, preservation, identification of natural history, and research activities in our nation, the one-of-a-kind PMNH does not receive the respect it deserves from the authorities.

The Pakistan Museum of Natural History (PMNH) is located in Islamabad, the capital of Pakistan. It was established in 1976 and is one of the leading

natural history museums in the country. The museum is dedicated to the preservation, study, and display of the natural history of Pakistan, including its geology, wildlife, and plants.

The museum includes a cutting-edge gemstone gallery, a gallery showcasing biodiversity, and galleries displaying Pakistani birds, dinosaurs, fossils, higher plants, medicinal plants, lower plants, mammals, reptiles, and fish.

Being the only one of its kind, this museum serves as an educa-

tional resource for the thousands of students and researchers who visit it every day, and the administration works within its means to give them a comfortable environment and the most amenities possible.

Dr. Saima Huma Tanveer, including the "cooperative development of an innovative auto-ID platform for beetles (order Coleoptera) from China and Pakistan" at a cost of Rs. 5 million.

Other projects include "Hazards of wildlife aircraft

strikes and their prevention," which will cost Rs. 4.3 million to complete, and "Biosystematics of Insect Fauna of Khunjerab National Park, Gilgit Baltistan," which will cost Rs. 4.5 million to complete.

The development of an outdoor volcano display, the incorporation of QR code technology so that visitors can scan the code of the exhibit with their Android phone and get all related information, the creation of a STEM Resource Lab for teachers, the upkeep of the museum building, and other projects are among the others.

Another innovative idea from the DG PMNH is to launch a training program for school-children to teach them how to film quick videos and learn about nature conservation practices.

The PMNH prepared 16 technical reports for field surveys and baseline studies of floral and faunal diversity in Khyber Pakhtunkhwa (KP) merged districts under the "Ten Billion Tree Tsunami (BTTP)" project. The collections made included 10,783 specimens, including flora, fauna, rocks, and fossils from across the country.

The administration ensured the cataloguing of 21,193 specimens, and 7,695 samples were also digitized. PMNH regularly organizes trainings, workshops, seminars...[Read More](#)



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Dr. Saima Huma Tanveer, stat-

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Hafiz Muhammad Zohaib

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## Winter And Lice Infestation In Cattle

**T**here is a seasonal pattern in the occurrence of lice infestation in cattle, with populations tending to build in the cooler months of the year and decline during the hot summer.

Lice are small, dorsoventrally flat-bodied skin parasites with legs modified for grasping hairs. They are very specific to the host. Cattle louse can only parasitize cattle and is unable to survive on another host for more than a day or two. In the winter, lice infestation in cattle is common. The cooler skin and winter coat favor the attachment of lice to the skin. Lice are of two types: sucking louse and biting louse, sometimes also known as chewing louse.

As the name indicates, the sucking louse sucks the blood of the host by piercing through the skin, while the biting louse gets its feed by biting skin debris, hair, and oily secretions.

Both the sucking and biting louses are important from an animal welfare point of view, as they are a continuous source of irritation and nuisance to the cattle.

Lice infestation in cattle not only causes anemia and productivity loss but also low-quality hides due to biting, scratching and rubbing the skin against walls, fences and trees.

It is also reported that lice may transmit dermatitis, anaplasmosis and rickettsiosis.

The life cycle of louse is completed on the host. The female louse lays one or two eggs per day, glued to hair shafts close to the skin. Within 8 to 19 days, the eggs hatch into nymphs. The nymph undergoes three molts on the host, each lasting ten days, before she develops into an adult. The adult female lives about 42 days and lays up to 50 eggs in her life. In cattle, the most prevalent biting louse is *Bovicola bovis*, reddish brown and 2 mm in length. It is usually found at the neck, shoulders, back and rump. Cattle infested heavily with biting lice can be diagnosed easily. The most obvious signs are rubbing the site of infestation against walls or fences and clumps of hair falling out. The scratch spots can be visualized on the body due to constant attempts of scratching. The hair become loose and fall off in result of a skin reaction.

The sucking lice of cattle with narrow, pointed heads include *Haematopinus Eurystheus*, commonly known as short nosed cattle louse, ranging in size from 3.5 to 5 mm. It is dark gray and can be found around the eyes, neck, and tail. The peculiar sign of short nosed cattle louse is the greasy appearance of cattle due to crushed lice and their feces, blood, and serum from wounds on the skin of cattle.

The other sucking louse is *Linognathus vituli*, 2.5 mm long with bluish black color and *Solenopotes capillatus*, the small-

est louse, only 1.2 mm in size. The head is brown, but the abdomen is blue. The preferred site of this louse is around the head and neck. Although mixed infestations of biting and sucking lice are common, they can be distinguished visually on the animal.

For visual examination of the animal, you must bring the animal in the sunlight. Examine with a magnifying glass by parting the hair of animals; this will assist you in locating the lice as they move away from the sunlight. The biting lice can be recognized by their rounded heads, brown color, and tendency to move fast when parting the hairs, while the sucking lice appear gray or blue with pointed heads that tend to remain fixed to the skin.

The presence of eggs stuck to the shafts of hair can also be visualized. In severe cases, sucking lice get densely packed and create characteristic quarter-sized black or brown spots that are difficult to move or disturb by skin searches.

On the other hand, biting lice do not like to form clusters; they are very active and move rapidly in response to disturbances. These tiny insects are easy to overlook in light infestations unless carefully inspected. In the case of suspected light infestations, the farmer must inspect the preferred areas of lice infestation.

Lice are passed from one cow to another through direct con-

tact. This is especially true on farms where many cows are kept in small sheds. The lice are host-specific, i.e., cattle lice can only survive on cattle and cannot infest sheep or goats, and vice versa. Some species of lice are site-specific, e.g., human hair louse, human body louse, and human pubic louse.

There is a seasonal pattern in the occurrence of lice infestation in cattle, with populations tending to build in the cooler months of the year and decline during the hot summer. The lice are not able to survive in higher temperature. So when the winter arrives, the healthy cattle with good immune system will keep lice population in check, while the immune-compromised cattle with poor body condition are more likely to have lice burdens.

Keeping in view the seasonal trend of lice, farmers need to be careful. The lice infestation is suspected when the cattle are found rubbing their bodies against the walls with patchy hair. The best thing is to take some precautionary measures by using insecticides at the end of fall or before the start of winter and then repeat it after two weeks. Most of the time, treating lice isn't taken seriously because it doesn't seem to change the rate of growth or weight. But in case of heavy infestation, when the whole farm encounters the lice problem, it becomes necessary to treat the whole herd. The other

reasons to consider treatment is presentation of the cattle for sale, hide quality at finishing and animal welfare.

The lice infestation must be considered with keen observation by the farmers during sale and purchase of the cattle. Only one cattle infested with louse can infest your whole herd. The best way to minimize the risk of infestation is quarantine measure; always keep the new bought cattle in isolation to observe for the signs of any external parasite or diseased condition.

Lice are spread primarily through direct animal-to-animal contact, but louse or egg transmission can also occur through leftover hair on fences, bedding, or vehicles in some cases. So the vicinity and facilities used by infested animal must be cleaned with the insecticides before arrival of the new animal or give a minimum interval often days to make sure the removal of lice from the area. Lice infestation in cattle must be controlled, some people were of the view that lice were not causing significant losses, so it was useless to spend money on their treatment.

However, in recent years there has been an increasing emphasis on hide quality and this is evident that majority of hide damage occurs when cattle scratches due to the presence of lice.

If the scratching is due to lice, the treatment is recommended...**Read More**



Steven Pinker

"As technology accumulates and people in more parts of the planet become interdependent, the hatred between them tends to decrease, for the simple reason that you can't kill someone and trade with him too."

Steven Pinker



Sabahat Zaineb



Tahreem Fatima



## Biofeedback, A Way To Manage Stress

**H**ear Rate Variability biofeedback uses sensors to measure an individual's heart rate and provide feedback on how to control it.

Health biotechnology is a field that is growing quickly. Its goal is to improve people's health and well-being by using new technologies and scientific methods. One area of health biotechnology that has shown promise in addressing stress is the use of biofeedback.

Stress is a common issue that affects many individuals in today's fast-paced society. It can show up in different ways, like anxiety, depression, or physical problems like headaches and tiredness. In extreme cases, it can even lead to serious health problems like heart disease and stroke.

Biofeedback is a way to keep track of how your body reacts to stress, such as your heart rate and muscle tension. This information is then used to help the individual learn how to control these responses and reduce stress levels.

One example of a biofeedback technology that is being used to reduce stress is heart rate variability (HRV) biofeedback. HRV biofeedback uses sensors to measure an individual's heart rate and provide feedback on how to control it. This can help individuals

learn how to relax and reduce stress levels.

Another area of health biotechnology that is being used to address stress is the use of virtual reality. Virtual reality technology can be used to create simulations of calming environments, such as a beach or a forest, which can help individuals relax and reduce stress levels.

Overall, health biotechnolo-

gy is becoming more important in helping people deal with stress and improve their health and well-being, with the continued development of advanced technologies and techniques.

Health biotechnology is

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making significant progress in developing new treatments and therapies to assist people in dealing with stress. These treatments and therapies are helping individuals lead healthier and happier lives.

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## Drug Delivery Biotechnology, Getting Drugs To Specific Part

**D**rug delivery Biotechnology is the science and technology of getting drugs to specific parts of the body in a controlled way.

Drug delivery is the process of making vehicles and finding ways to control how drugs work in the body. By controlling where and when bioactive compounds show up, drug delivery strategies try to improve therapeutic efficacy, reduce side effects, and get patients to take their medicine as prescribed.

Drug delivery Biotechnology is the science and technology of getting drugs to specific parts of the body in a controlled way. This can be done in a number of ways, such as by putting them inside nanoparticles, attaching them to antibodies, or using polymeric systems.

The goal of biotechnology for drug delivery is to make drugs work better and be safer by making them more stable, directing them to specific cells or tissues, and reducing their side effects.

Drug discovery Biotechnology is the process of identifying new potential drugs through research and development.

This can include using computational methods to identify drug targets, screening large libraries of compounds for activity, and developing new technologies for

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drug synthesis and purification. The goal of drug discovery biotechnology is to discover new treatments for diseases with high unmet medical need.

Drug delivery and drug discovery are two of the most exciting areas of biotechnology. They have the potential to revolutionize the way we treat diseases and improve the lives of millions of people.

The development of a nanoparticle-based therapy for cancer is an example of a recent step forward in drug delivery. A chemotherapy drug is put inside

a nanoparticle, which can then be used to target cancer cells. It has been shown that this method works much better than traditional chemotherapy and has fewer side effects.

Another example of a promising drug discovery is the development of a new class of drugs called CRISPR-based therapeutics.

CRISPR is a powerful tool that allows scientists to precisely edit the genetic code of cells. This has the potential to treat a wide range of diseases, including genetic disorders and cancer.



Uzair Ahmed

*The Swiss biologist Johannes Friedrich Miescher discovered and identified DNA during research on white blood cells in 1869. James Watson and Francis Crick discovered the structure of the double helix of DNA and proved that DNA stores the genetic information of a living organism*



## The Mystery Of Dark DNA

**T**he missing side of that hidden sequence “DARK DNA” refers as “Dark matter” and this make up the 25% of the Universe but still we can't detect.

With the help of DNA sequencing technology, scientists solved many unraveled questions like “how giraffes got their high necks” and “why humans are similar to their parents and siblings.” All of life's mysteries are encoded in a DNA sequence, but what if we get something that isn't encoded in DNA? But it exists. Is this a challenge to scientists' beliefs? Or something is present in the mystery of DNA that has not yet been discovered? Or can we call it “Dark DNA”?

### Discovery of DNA

The Swiss biologist Johannes Friedrich Miescher discovered and identified DNA during research on white blood cells in 1869. James Watson and Francis Crick discovered the structure of the double helix of DNA and proved that DNA stores the genetic information of a living organism.

### What is DNA?

According to the NIH, Deoxyribonucleic acid is a complex molecule present inside the cells of humans, animals, plants, archaea, bacteria, fungi, etc. This information is stored in the form of genes, which are then used to determine an organism's structure and function.

DNA is double-helical (two strands) and ladder shaped.

Each base is made of a backbone of phosphate and deoxyribose sugar, and each sugar is attached to one of the four bases: thymine (T), cytosine (C), guanine (G), or adenine (A). The double helix of DNA is connected by chemical bonds between bases: cytosine bonds with guanine and adenine bonds with thymine.

These bases code biological information for RNA molecules or proteins. Our DNA says who we are. The more we understand DNA, the more we understand the surrounding mysteries. The most special thing about the DNA is that the DNA of any two different people is 99.9% identical and only 0.1% different. By DNA barcoding, we identify the quick and precise identification of different organisms.

### DNA Sequencing

DNA sequencing is a general laboratory method to understand the sequence of base pairs (A, G, T, C). To determine the order of base pairs within the DNA is known as DNA Sequencing.

Dark Side of DNA / Dark DNA DNA sequencing technology finds problems in sequencing the side that is GC-rich. This makes it more difficult to detect the genes that we are looking for. The missing side of that hidden sequence “DARK DNA” refers as “Dark matter” and this make up the 25% of the Universe but still we can't detect.

### Finding of Dark DNA

Adam Hargreaves published an article on August 24, 2017 and said that “his colleagues and he first faced this during the

sequencing of the genome of the sand rat (*Psammomys obesus*), which is a species of gerbil.” that lives in a sandy environment (desert) and is known as the sand rat. They were looking for gerbils' genes that are responsible for the production of insulin, and they wanted to understand why this animal is specifically sensitive to Type 2 diabetes. But when they looked for a gene called *Pdx1* that controls the secretion of insulin, it was missing, and 87 other genes surrounding it were also missing. Including those missing genes, *Pdx1* is essential, and animals cannot survive without it. They discovered that one part of the rat genome has excessive mutations, and all the genes in this mutation have GC-

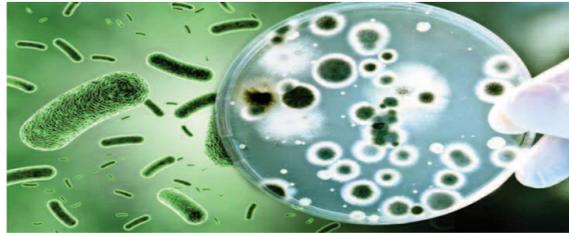
rich DNA, making detection difficult. This was previously found in birds. Researchers determine that 274 genes are missing from sequenced bird genomes, and these genes also have highly GC-rich regions, and their products are found in the bird's body, but the gene appears to be missing.

### Conclusion

The genome has some regions with a high level of GC content, but they are not sequenced by standard methods. If they are responsible for some product formation in the body, they are supposed to be missing during sequencing, but they are present and cannot be sequenced because of GC-rich regions. These missing regions are called “DARK DNA.”



Sania Zehra



Wajih Babar



## How Microbes Deal With The Environment?

**M**icrobial adaptation is a term that illustrates the potential of microbes to bear the selective pressures of their environment.

The term “microbial adaptation” describes how microbes deal with the selective pressures of their environment. The microbial pathogens face these pressures because of the biological barriers in the body and the tissues they attack, such as infection, anti-sepsis, the immune system, and the drugs we use to stop them.

Microorganisms (or microbes) are organisms that can be seen through microscopes, are found almost everywhere on Earth, and can live in any environment.

However, bacteria and parasites are able to turn on different sorts of genes in response to different stimuli. Microbes are organisms that can easily adapt to changing environmental conditions.

Their home changes from the cold of Antarctica to geothermal volcanic areas, from land to sea, from areas that are very alkaline to areas that are very acidic, and from sources of fresh water to sources of brackish water.

It is important to know about how microbes deal with the environment because they are so different. They can not only live in hot or cold places, but also in harsh places with little water, a lot of salt, or little oxygen.

At the cellular, genetic, and molecular levels, scientists have looked into how microbes change and adapt. So, adaptation is caused by things like genetic recombination, natural selection, horizontal gene transfer, repairing DNA damage, and pleiotropy.

Because their environment is always changing, these microbes are limited by a lack of nutrients, changes in temperature, pH, or osmolarity, radiation, or harmful agents like heavy metals and high levels of superoxide.

**Gemma Reguera, Ph.D., an Academy fellow and editor-in-chief of Applied and Environmental Microbiology, said, “Microbes have been around for billions of years and have survived many changes to our planet.”**

**“Something that amazes me is that microbes always figure out a way to adapt.” “And even though we are making a lot of changes to our planet, microbes still live and even grow.”**

In response, these microorganisms use transcriptional regulatory circuits to find extracellular signals and turn them into signals that tell the cells what to do. This changes gene expression and protein activity. But not every microbe can live in every kind of environment; they have to find a way to stay alive in a small range of conditions.

Due to their metabolic activities, roles in food production and biotechnological processes, and interactions with plants and animals, the different kinds of microorganisms are good for the environment.

Gemma Reguera, Ph.D., an Academy fellow and editor-in-chief of Applied and Environmental Microbiology, said, “Microbes have been around for billions of years and have survived many changes to our planet.”

“Something that amazes me is that microbes always figure out a way to adapt.” “And even though we are making a lot of changes to our planet, microbes still live and even grow.”

Microbiologists use physical and chemical factors like pH, temperature, salinity, etc. to study microbes because of how different they are, how they live, and how they have changed over time. The samples are collected from the different habitats of different species, and it is seen how and why they are living there.

Researchers are trying to figure out how the microbes are related to the weather and how they affect the ecosystem and human health.

People have noticed that some play a big part in helping the environment, like by being major drivers of elemental cycles (like carbon, nitrogen, and phosphorus) and eating greenhouse gases like methane and carbon dioxide.

Others, on the other hand, are increasing methane, carbon dioxide, and nitrogen oxide levels. Even the less-wanted pathogenic bacteria, viruses, and fungi are trying to survive in new environments under changing climate conditions.

## World Transformation Using Benefits Of Biofuels

**T**he benefits of biofuels are nothing short of revolutionary, and they are thought to represent the energy production of the future.

With the increasing global concern about climate change and the need to reduce emissions, there is a mounting interest in various forms of renewable energy sources. One of these is biofuel—liquid fuels derived from renewable plant or animal sources. The benefits of biofuels are nothing short of revolutionary, and they are thought to represent the energy production of the future.

Fossil fuels such as coal and oil are the main source of energy for the world. However, they are also a major source of pollution and greenhouse gases. Burning fossil fuels releases carbon dioxide and other pollutants into the atmosphere, which can contribute to climate change.

To reduce the harmful effects of fossil fuels, we need to switch to cleaner sources of energy, like biofuels. Biofuels are renewable and produce far less pollution than fossil fuels. Using biofuels can also help lessen our reliance on oil from other countries, which can improve our energy security.

What are biofuels? Biofuels are renewable, plant-based fuels that can be used in place of traditional fossil fuels. Biofuels are often made from agricultural products like corn or soybeans, but they can also be made from algae or other plant matter. Unlike fossil fuels, biofuels are carbon-neutral, meaning they don't release new greenhouse gases into the atmosphere when burned.

There are two main types of biofuels: ethanol and biodiesel. Ethanol is a type of alcohol that can be blended with gasoline to create a fuel that can be used in flex-fuel vehicles.

Biodiesel is a type of diesel fuel made from plant oils or animal fats. Biofuels can be used in any vehicle that uses gasoline or

diesel fuel, including cars, trucks, buses, trains, boats, and airplanes.

How are biofuels made? Biofuels are created through a variety of processes, depending on the feedstock being used.

For example, ethanol can be produced from biomass through fermentation, while biodiesel is typically made via transesterification of vegetable oils or animal fats.

Other biofuels include biogas, which is produced through the anaerobic digestion of organic matter, and pyrolysis oil, which is derived from the thermal decomposition of biomass.

What are the benefits of biofuels?

There are many benefits of biofuels. They can help reduce dependence on fossil fuels, they are renewable and sustainable, they can help reduce greenhouse gas emissions, and they can create jobs and economic development.

1. Biofuels are made from plant materials such as corn, soybeans, or algae. When burned, they release energy that can be used to power vehicles or generate electricity. Biofuels burn cleaner than gasoline or diesel and emit fewer greenhouse gases into the atmosphere.

2. Biofuels are renewable and sustainable because they are made from plants that grow back after being harvested. This means that we can continue to produce biofuels indefinitely, without running out of resources.

3. In addition to being renewable and sustainable, biofuels can also help reduce greenhouse gas emissions. Greenhouse gases trap heat in the atmosphere and contribute to climate change. By reducing our reliance on fossil fuels and using cleaner burning biofuels instead, we can help mitigate the effects of climate change.

4. Finally, biofuels can create jobs and spur economic development. The production of biofuels requires farmers to grow crops, which creates jobs in the

agricultural sector. In addition, the production and use of biofuels create jobs in the transportation and energy sectors. By investing in the production of biofuels, we can create new jobs and support economic growth.

How can I use biofuels in my daily life?

Biofuels are a good alternative to fossil fuels because they can be made over and over again and release less greenhouse gas when burned. As a way to get less oil and gas from other countries, many countries are now investing in biofuel production.

There are two main ways to use biofuels in your daily life: through transportation or by generating electricity.

Biofuels can be used in conventional gasoline and diesel engines without any modifications. In fact, most cars can run on a blend of up to 10% biofuel without any problems. The most common type of biofuel used for transportation is biodiesel, which can be made from vegetable oils and animal fats. Although biodiesel can be used straight (at 100%) in some diesel engines, it is usually blended with petroleum diesel to produce a lower-emissions fuel.

Another way to use biofuels in transportation is through ‘flex-fuel’ vehicles. These cars can run on gasoline, ethanol (a type of alcohol made from plants), or a mixture of both. There are already millions of flex-fuel vehicles on the road in the United States and Brazil, two countries with large sugarcane industries that produce ethanol fuel.

### Conclusion

In conclusion, biofuels offer a variety of potential benefits for the world. From providing an alternative to depleting fossil fuels to reducing pollution and improving air quality, these renewable forms of energy are potentially very beneficial for both the environment and society as a whole. Even though making and using biofuels may have some downsides, their effects on the planet could have far-reaching effects that can help change our world for the better.



## Script Connect App To Help Journalists Finding Reliable Researchers

Charles Wendo and his group created Script Connect App to help journalists in Africa find reliable researchers to interview for comment or original stories.

Charles Wendo, a training coordinator at SciDev.Net, and his group created Script Connect App to help journalists in Africa find reliable researchers to interview for comment or original stories. The tool links journalists in the area with scientists and researchers.

The biggest issues facing science journalism in East Africa, according to scientists, journalists, and communicators, were lack of access to scientific

information and difficulty understanding the information in front of them according to study carried out by SciDev.Net. The study focused on Burundi, Kenya, Rwanda, South Sudan, Tanzania, and Uganda.

He said, "We created an app that facilitates journalists' work by assisting in locating the experts to interview. The app also aids researchers in locating journalists who might be interested in covering their research."

Script Connect App, which was formally introduced in July 2022 at a conference on science communication held at Moi University in Kenya, had 40

journalists and 135 researchers in its database at the time of this writing. Using the app, journalists can search for researchers by their areas of expertise and message them. During its pilot phase, the app concentrated on agriculture and hired specialists in Kenya and Uganda. Later, Wendo said, "We intend to expand to other nations and topics." Ambrose Kiprop, deputy vice chancellor of administration, planning, and strategy at Moi University and one of the first researchers to use the app, explained that while there is a sizable amount of research across scientific disciplines produced by universities in East Africa, only a

small portion reaches the people who need the information most: for example, farmers, manufacturers, and automakers. Kiprop believes that a simple channel should be created to share paramount findings with consumers, as this is the optimum goal for every scientist who has the well-being of the consumer at heart. Even though Script Connect App is still in its early stages, Kiprop has been able to network with researchers across a wide range of disciplines, including agriculture, animal health, human health, and the environment sector, in his search for regional and local scientific collaborations...[Read More](#)

## Electronic Medical Records & EHRs Can Enhance Healthcare In Africa



Electronic Health Records (EHRs) and Electronic Medical Records (EMRs) can transform African healthcare delivery by improving access to care, health outcomes, and care quality

Electronic Health Records (EHRs) and Electronic Medical Records (EMRs) can transform African healthcare delivery by improving access

to care, health outcomes, and care quality. Despite these benefits, significant challenges remain, including a lack of investment, infrastructure, and technological expertise.

Nonetheless, there is growing interest and investment in EHRs and EMRs in Africa, and these systems could play a role in the region's healthcare landscape in the coming years.

Have you ever been to two hospitals within a short interval and been asked to perform the same tests, leading to a waste of resources and time? I have, and I can tell you firsthand that it was not a pleasant experience.

In 2022, I visited four hospitals that asked me to repeat at least two previous tests that came out negative. I informed one of the doctors that I had done some of them, but they insisted I do them again.

Perhaps, if these hospitals had adopted the Electronic Medical Record (EMR) or Electronic Health Record (EHR) system, doctors would have easily accessed my medical records, avoiding duplicate tests and procedures.

However, these hospitals — representative of most African hospitals — continue to use paper-based medical and health records, reducing efficiency and effectiveness...[Read More](#)

## African Tech Startups Funding Passes \$3 Billion Mark: Disrupt Africa



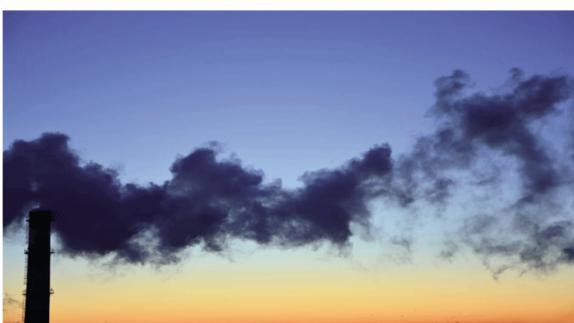
Disrupt Africa released its annual African Tech Startups Funding report showing that for the first time ever tech funding on the continent has passed the \$3 billion mark.

Disrupt Africa released its annual African Tech Startups Funding report showing that for the first time ever tech funding on the continent has passed the \$3 billion mark. While this might not be as big a leap as in 2021, when the sector passed both the \$1 billion and \$2 billion mark, it's a sign of continuous investors' confidence in the sector's oppor-

tunities. The report cautions that measuring this kind of funding is not an exact science, as the definition of "African startup" itself remains controversial.

"In the clearest scenario, an African startup would be headquartered in Africa, founded by an African, and have Africa as its primary market. This, however, is rarely the case," the document states. But tracking this one particular source of startup funding data over time shows the impressive growth of the African startup...[Read More](#)

## Researchers Need To Prioritize Reduction Of Indoor Air Pollution



More than 3 million people died from indoor air pollution in 2020, but it has largely gone unnoticed by science and policy.

A common misconception about air pollution is that it causes smoky cities and chimney stacks. More than 3 million people died from indoor air

pollution in 2020, but it has largely gone unnoticed by science and policy.

Christopher Whitty, Deborah Jenkins, and Alastair Lewis outline what scientists and decision-makers need to do to advance knowledge and lessen indoor air pollution in a Comment piece published in Nature.

A serious problem that has gone unaddressed for too long is indoor air pollution. It contains well-known substances like carbon monoxide and carbon dioxide from burning coal, as well as nitrogen oxides from natural gas boilers...[Read More](#)

## Scientists Reveal Evidence Of Oldest Stone Tools Used By Humans

The work provides the earliest examples of the Oldowan toolkit, a crucial stone-age innovation, as well as the earliest proof of very large animal consumption by hominins. Scientists have discovered new evidence that our ancestors used some of the oldest stone tools ever discovered to butcher hippos and pound plant material. The work provides the earliest examples of the Oldowan toolkit, a crucial stone-age innovation, as well as the earliest proof of very large animal consumption by hominins. Around 2.9 million years ago, the tools were used in Kenya...[Read More](#)

## Conservationists Opposing India's Plan To Import African Cheetahs



A contract has been signed for the shipment of 12 cheetahs over the next ten years, with the first group arriving this month.

Conservationists have criticized the Indian government's plan to relocate African cheetahs to India and release them into the wild, calling it "ecologically and scientifically flawed". A contract has been signed for the shipment of 12 cheetahs over the next ten years, with the first group arriving this month.

Eight African cheetahs currently reside in India's Kuno National Park (KNP), which is located in the Madhya Pradesh state in the centre of the country.

According to a statement released by the Indian government in the final week of January, "Following the import of the 12 cheetahs in February, the plan is to translocate a further 12 annually for the next eight to 10 years."

In September 2022, the first group of eight African cheetahs was airlifted from Namibia and

released in the park, beginning the ambitious Cheetah Introduction Project (CIP) of the Indian government to reintroduce the big cats to India.

Asiatic cheetahs in India became extinct over seven decades ago, leading to a massive loss of biodiversity. S.P. Yadav, head of Project Tiger, believes it is our moral and ethical responsibility to bring back the cheetah, but conservationists are divided over the Indian government's current plan to introduce African cheetahs.

In October, a group of wildlife scientists from India, South Africa, and other countries said that India's current Action Plan for Introduction of Cheetah in India (APICI) was "ecologically unsound, costly, and may serve as a distraction rather than help global cheetah and other science-based conservation efforts."

The CIP of the Indian government estimates that a maximum of 21 cheetahs can reside in the 748-square-kilometre KNP.

Wildlife biologist Ravi Chellam, one of the authors of the opinion piece, told VOA that the KNP is too small to host a viable population of the big cats, as the average cheetah density in the best of the habitats in Africa is 1 per 100 square kilometres. He is the CEO of Metastrang Foundation, an organization working in the field of environment and public health. Michael G.L. Mills, a large carnivore specialist based in South Africa, agreed with Chellam that the KNP is not appropriate for India's cheetah action plan. According to Mills, "the range quality is also important for maintaining a viable cheetah population, with a need for open or semi-open habitat with enough suitable wild prey...[Read More](#)

## US Kicks Off Initiative To Help African Farmers And Government

According to Fowler, crops that are adapted to environment, pests, diseases, and consumer demands are necessary for food security. Rich harvests are not produced by poor soils.

In collaboration with the African Union, the United Nations, and others, the U.S. State Department has launched an initiative to assist African farmers and governments in preparing for and adjusting to challenges related to food security brought on by climate change.

The new program was introduced for African farmers on Wednesday at the Center for Strategic and International Studies in Washington by Dr. Cary Fowler, the United States' special envoy for international food security.

According to Fowler, crops that are adapted to the environment, pests, diseases, and consumer demands are necessary for food security. Rich harvests are not produced by poor soils.

Fowler, who recently travelled to Zambia and Malawi, cautioned that it is urgently necessary to develop crops that are ready to withstand the effects of

climate change and the demands of the continent's expanding population in terms of agricultural productivity.

"We see a real opportunity to promote soil health and climate resistant crops in Africa at a time when the continent is experiencing weather extremes and population growth," said Fowler.

"Africa will have the most people on it by the turn of the century, as you probably already know, but there are already 300 million people on the continent who lack access to food."

According to Fowler, historically, most adaptation efforts have been concentrated on a

small number of crops like maize, rice, and wheat. He argued that lesser-known crops that are high in vitamins and micronutrients should also receive this attention.

According to him, "other crops such as grains, such as sorghum, millet, and teff, and nearly all of the root and tuber crops, and the hundreds of indigenous African fruits and vegetables, have received much attention." "Their low yields and untapped potential are not surprising. "In the history of agriculture, there has never been a single plant breeder with scientific training working on many of these crops...[Read More](#)

