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Coordinator PABIC

PAKISTAN BIOTECHNOLOGY INFORMATION CENTER (PABIC)

Highlights of Current Issue



- Messages of the Patron PABIC and Director ICCBS
- Agri-Biotech News
- Other than Crop Biotech News
- International News
- National News
- PABIC in Photographs (2010 To 2012)



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MESSAGE OF THE PATRON PABIC



One of the most important challenges of modern time is to provide nutritious food, and quality health care facilities to the rapidly growing population of the world. These are also among the SDGs which every nation committed to achieve by 2030 (SDG 2 Zero Hunger, and SDG 3 Good Health and Well-Being). Unfortunately, most of the OIC member states have not made significant progress in achieving these goals. Many countries are not only the net importers of food commodities and pharmaceutical products, but also lack capacities and policies to make progress towards food and health security. Therefore, there is a need to develop coherent policies to develop indigenous technological development, and foster collaboration with other nations for hard prosperity. There is a serious lack of appreciation of scientific outcomes at the public and industrial levels. Coordination and exchange of information among the researchers and end users of science (public, and industries) is less than adequate. There is a lack of communication about the fruitful outcomes of modern science for common good. Therefore, there is need of specifically trained science communicators to facilitate scientists in communicating scientific information to those outside their immediate fields.

The **Pakistan Biotechnology Information Center (PABIC)**, under the patronage of the OIC-COMSTECH, is actively working to promote modern biotechnological applications in Pakistan and in the OIC nation since 2007. The main emphasis of PABIC is on the training of media personnel and journalists on objective reporting of the biotechnology and related issues and to design educational approaches to train interdisciplinary scientists and young scholars in emerging area of health, agriculture, bioinformatics and environmental biotechnology.

I hope the newsletter in hand will not only highlight the new and exciting developments of biotechnological approaches in various fields of sciences and technology but also contribute towards encouraging young scholars to adopt the emerging sciences as their research passions.

Prof. Dr. M. Iqbal Choudhary, *Mustafa (PBUH) Prize Laureate, H.I., S.I., T.I.*

Patron PABIC

Coordinator General OIC-COMSTECH

Advisor and Distinguished National Professor

*International Center for Chemical and Biological Sciences,
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MESSAGE OF THE DIRECTOR, ICCBS



Modern biotechnology is among the most exciting fields of emerging sciences, offering countless opportunities to address enduring challenges of food security and healthcare. The integration of biotechnology with other sciences is providing solutions to most pressing problems of modern times, food, health, and environment.

The **Pakistan Biotechnology Information Center (PABIC)** is a premier national organization dedicated to the advancement of biotechnology in Pakistan. Established with the vision of promoting scientific research in the field of biotechnology, PABIC plays a key role in facilitating the exchange of knowledge and resources related to biotechnological advancements. It gives me great pleasure to welcome you to the latest edition of PABIC Newsletter. I hope this newsletter will enhance the knowledge and awareness of contemporary techniques across various branches of biological sciences, especially among emerging researchers.

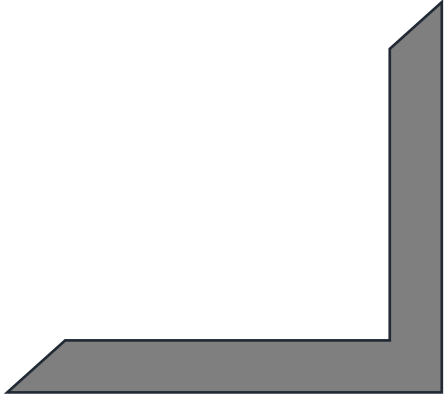
Prof. Dr. Muhammad Raza Shah, T.I.

Director

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PABIC Activities

COMSTECH-PABIC-ICCBS Winter Internship Program for Youth – 2025

The four weeks COMSTECH-PABIC-ICCBS Winter Internship Program for Youth – 2025 has been successfully concluded on 14 January, 2026. The Internship Program was an initiative of Pakistan Biotechnology Information Center (PABIC) under the project titled “*Dissemination of Information, Raising Awareness and Capacity Building about the Application of Modern Biotechnology in OIC Member and Observer States*” funded by the OIC-COMSTECH (the Ministerial Standing Committee on Scientific and Technological Cooperation of the Organization of Islamic Cooperation) and granted to Prof. Dr. Sammer Yousuf (Coordinator PABIC, HEJ Research Institute of Chemistry, International Center for Chemical and Biological Sciences, University of Karachi) with aims to promote multidisciplinary collaboration, while enhancing awareness and appreciation of modern sciences at both local and OIC levels. The internship was availed at various laboratories of the International Center for Chemical and Biological sciences by 34 BS / MS students from various departments of University of Karachi, Jinnah University for Women, Karachi, University of Turbet, Baluchistan, University of Peshawar, Dow University of Health Sciences, University for Sindh Jamshoroo, and NED University of Science and Technology.

H.E. Prof. Dr. M. Iqbal Choudhary, Coordinator General of OIC-COMSTECH, encouraged the internees to learn the ethics of both life and science. Prof. Choudhary emphasized the importance of focusing on soft skills and developing learning flexibility to remain up to date in their respective research areas. He further added that there is no shortcut to excellence; it is achieved only through hard work and continuous learning.



Phone Cameras May Soon Detect DNA Sequences

Researchers from Aarhus University in Denmark have developed a new method that could enable the detection of specific DNA sequences using a smartphone camera. The technique uses engineered proteins that generate light when DNA is present, potentially making DNA testing faster, cheaper, and more accessible in food, healthcare, agriculture, and pharmaceuticals.

The new approach replaces costly and time-consuming laboratory DNA analysis with a method that detects DNA through light signals captured by a phone's camera. Their research, published in *Nature Communications*, builds on the team's work in engineering molecules and synthetic cells to better understand how natural cells function.

The study demonstrates that specific DNA interactions can lead to simple, portable DNA detection systems. While the technology is not yet ready for everyday use, the findings show the potential for DNA analysis to be done quickly outside the laboratory, with broad, promising applications in biotechnology, agriculture, medicine, and environmental science.

ISAAA Link: <https://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=21657>

Original Link: <https://chem.au.dk/en/the-department/news-and-events/single/artikel/breakthrough-now-we-can-detect-specific-dna-with-a-phone-1>

Experts Identify Protein Network, Coordinating Iron Balance Across the Entire Plant

Researchers from the Xishuangbanna Tropical Botanical Garden (XTBG) of the Chinese Academy of Sciences (CAS) have uncovered a sophisticated protein network that regulates iron balance throughout a plant's body. This discovery, published in *The Plant Cell*, fills a critical knowledge gap regarding how plants coordinate essential nutrient levels between their roots and shoots to maintain health.

The study identified a functional division of labor among specific proteins to manage iron homeostasis. While previous research has primarily focused on root responses, this team found that the protein BRUTUS (BTS) plays a vital role in protecting shoots by preventing iron overaccumulation and toxicity. Meanwhile, its related proteins, BTS-LIKE1 and 2 (BTSL1/2), operate mainly in the roots to downregulate iron-deficiency responses. A group of transcription factors known as bHLH IVc acts as the central hub, interacting with these proteins to bridge the signaling gap between the roots and the aerial tissues.

The findings are significant because they solve a long-standing mystery regarding systemic iron signaling across a plant's biomass. By using *Arabidopsis thaliana* as a model, the researchers demonstrated that without these regulatory safeguards, plants suffer from leaf chlorosis and sterility due to oxidative stress. Lead researcher Liang Gang noted that identifying the bHLH IVc group as a mediator allows for a better understanding of how plants precisely balance nutrient uptake with metabolic needs, which could eventually inform more resilient crop development.

ISAAA Link: <https://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=21675>

Original Link: <https://english.cas.cn/>

Gene Editing Enhances Oil Yield, and Quality of *Jatropha* Bio-diesel

Researchers from the Chinese Academy of Sciences and Guangxi University have identified a gene that could significantly improve the commercial potential of *Jatropha curcas*, a drought-tolerant shrub widely seen as a promising source of biodiesel and bio-jet fuel. A new study reports that targeted genetic modification can increase both seed yield and oil content in *Jatropha*.

The study identified *JcSPL9* acts as a master switch that determines when the plant transitions from growing leaves to producing flowers and seeds. In this study, the researchers edited the plants to overexpress a modified form of *JcSPL9*, known as r*JcSPL9*, and compared them with plants in which a related regulatory molecule, *JcmiR156a*, was increased.

The results showed that r*JcSPL9* plants produced 80.76% more seeds and 12.6% higher oil content, while plants with elevated *JcmiR156a* experienced a 51.67% drop in seed yield and an 8.27% decrease in oil content. The researchers concluded that *JcSPL9* is a promising target for molecular breeding in *Jatropha* and other major oilseed crops, including soybean, canola, and sunflower, to help meet growing demand for biofuels and renewable resources.

ISAAA Link: <https://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=21685>

Original Link: http://english.xtbj.cas.cn/rh/rp/202601/t20260127_1146876.html

Europe's First Precision-Bred Rape seed Moves to Commercial UK Farms

Europe's first precision-bred oilseed rape (OSR) is set to move from the laboratory to commercial farms under a new £2.5 million research project. The three-year initiative, titled LLS-ERASED (Light Leaf Spot Enhancing Resistance And reducing Susceptibility with EDiting), aims to help UK farmers combat light leaf spot, a devastating disease that caused over £300 million in yield losses in 2022. Led by the British On-Farm Innovation Network (BOFIN) in collaboration with researchers from the University of Hertfordshire and the John Innes Centre, the project is funded through Defra's Farming Innovation Programme and delivered in partnership with Innovate UK.

The project will use gene editing technology to "switch off" specific susceptibility genes within the plant's own DNA, a process that does not introduce foreign genetic material. This precision-breeding approach allows researchers to develop resilient varieties much faster than traditional breeding methods. By reducing the crop's vulnerability to fungal pathogens, the initiative aims to provide a more durable protection that is less reliant on chemical fungicides, which have become increasingly unreliable due to evolving pathogen resistance.

This effort marks the first time precision-bred technology will be deployed on commercial farms across Europe. Beyond the laboratory work led by the John Innes Centre and the University of Hertfordshire, the project integrates real-time disease forecasting and decision-support tools for growers. By establishing a robust pipeline for future traits, such as resistance to the cabbage stem flea beetle, the UK aims to position itself as a global leader in sustainable, science-based farming as it navigates its new regulatory freedom under the Genetic Technology (Precision Breeding) Act.

ISAAA Link: <https://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=21682>

Original Link: <https://www.herts.ac.uk/about-us/news-and-events/news/2026/new-2.5m-project-aims-to-tackle-the-uks-biggest-oilseed-rape-disease-and-rebuild-the-crops-future>

Scientists Fine-Tune Rice Gene to Fight Sheath Blight

Researchers from India used CRISPR-Cas9 gene editing technology to improve rice resistance to sheath blight. The disease, caused by the fungus *Rhizoctonia solani*, leads to significant yield losses and remains difficult to manage due to the limited availability of resistant rice varieties. In the study published in *Physiological and Molecular Plant Pathology*, the research team was able to reduce rice's susceptibility to the disease while maintaining normal growth and yield.

OsSWEET11 is known to act as a susceptibility gene because it helps transport sugars that the pathogen uses to infect the plant. However, completely turning off the gene can harm grain filling and reduce yield. To address this, the research team fine-tuned OsSWEET11 expression in the rice cultivar ASD16 instead of disabling it.

The results revealed that the homozygous promoter-edited mutants showed 20-35% lower disease severity compared to the wild type. Upon *R. solani* infection, the edited mutants also had up to 60% less fungal biomass and reduced sugar accumulation. The findings demonstrate that targeted promoter editing of OsSWEET11 offers a promising strategy to develop sheath blight-resistant rice without sacrificing plant growth and grain production.

ISAAA Link: <https://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=21695>

Original Link: <https://www.sciencedirect.com/science/article/pii/S0885576526000081>

Negative GMO Perceptions Could Influence Gene-Edited Crop Acceptance

A study in Southern Ontario, Canada, finds that public perceptions of gene-edited crops may be strongly influenced by the negative frames that have shaped perceptions of genetically modified organisms (GMOs). Researchers from the University of Toronto and McMaster University examined public understanding of GMOs and CRISPR crops in the Greater Toronto-Hamilton area, and how past GMO debates shape attitudes toward gene editing.

The research team conducted a public survey of adults alongside interviews with science journalists. The results showed continued hesitation toward both GMOs and CRISPR crops, with acceptance shaped largely by consumer concerns, such as cost and purchasing behavior. Journalists interviewed in the study highlighted key challenges, including limited public understanding of biotechnology, the influence of social media, and the cost of goods.

The study found that many people do not distinguish between traditional GMOs and CRISPR-edited crops. The researchers warn that without clearer communication and transparency, CRISPR crops may become associated with the negative perceptions long tied with GMOs. They say stronger science communication will be critical to improving public understanding and acceptance of emerging crop technologies.

ISAAA Link: <https://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=21699>

Original Link: <https://www.tandfonline.com/doi/full/10.1080/21645698.2026.2620131>

Brazilian Researchers Identify Wild Peanut Gene That Boosts Plant Immunity

Researchers at Embrapa Genetic Resources and Biotechnology have discovered a gene from a wild peanut ancestor that acts as a biological "alarm," significantly enhancing a plant's ability to survive drought and resist pests.

The gene, known as *AdEXLB8*, was isolated from *Arachis duranensis*, a wild ancestor of the modern peanut native to South America. Unlike traditional genetic modifications that provide a single line of defense, this gene triggers a mechanism called "defense priming." This process essentially creates a molecular memory, keeping the plant in a state of constant readiness. When under threat, the "primed" plants can react much faster to environmental stress or biological attacks without wasting the energy typically required for growth and productivity.

The *AdEXLB8* gene was overexpressed in genetically modified tobacco, soybean, and peanut plants. The transgenic plants showed increased tolerance to two species of root-knot nematodes, the fungus *Sclerotinia sclerotiorum*, and droughts, even when those stresses occurred simultaneously. In the roots of plants where the gene was overexpressed, *AdEXLB8* led to a 60% reduction in nematode infections and significantly higher tolerance to water scarcity and fungal diseases. Scientists noted that the plants maintained their high yields and quality even while under pressure. This breakthrough, currently being patented, can be applied to other crops, such as tomatoes, soybeans, and cotton.

ISAAA Link: <https://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=21691>

Original Link: <https://www.embrapa.br/en/busca-de-noticias/-/noticia/106430277/gene-de-parente-silvestre-do-amendoim-ativa-memoria-de-defesa-contra-seca-e-pragas>

UQ Researchers Reveal RNA-Based Biopesticides Can Travel from Leaves to Roots

Researchers at the University of Queensland have discovered that RNA-based biopesticides applied to plant leaves can move throughout the entire plant, reaching even the roots. This finding overturns previous beliefs that such molecules remain only where they are applied. The study, led by Dr. Chris Brosnan at the Queensland Alliance for Agriculture and Food Innovation, showed that double-stranded RNA can travel intact through the plant's internal transport system, enabling protection against underground pests like nematodes and fungi.

This breakthrough highlights a promising, environmentally friendly alternative to chemical pesticides. By using RNA interference to target and disable essential genes in harmful organisms, the method can control pests without damaging crops or beneficial insects. The discovery also challenges earlier assumptions about RNA's instability in soil, suggesting that delivering it through plant tissues could make it far more effective. This advancement could play an important role in improving crop protection and strengthening global food security.

ISAAA Link: <https://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=21706>

Original Link: <https://news.uq.edu.au/2026-02-moving-biopesticides-through-plants-opens-new-opportunities>

KAMALA, A genome Edited Rice Variety With Improved Yield by Finetuning Cytokinin Oxidase Activity Released in India

Increasing yield is of major importance for Asian and African food security. *Knock out* mutants in the rice cytokinin oxidase gene *CKX2* had shown potential for yield improvement. Here we explored whether subtle changes in *CKX2* activity by editing FAD and cytokinin binding site sequences could improve the Indian mega-variety Samba Mahsuri. *Knock out* and single mutants in FAD and cytokinin binding sites induced by CRISPR/Cas12a caused moderate yield increases. Among 80 *CKX2* alleles, five lines with in-frame mutations in both FAD and cytokinin binding domains produced even higher yield. One line, *KAMALA*, showed superior agronomic performance in 18 field locations (irrigated and rainfed ecologies) over three seasons in trials conducted by AICRPR (All India Coordinated Research Project on Rice), with an average 19% grain yield increase, early maturity, complete panicle emergence, and unaltered grain quality. *KAMALA* was registered as the first genome-edited variety ready for cultivation by Indian farmers.

Original Link: <https://www.biorxiv.org/content/10.64898/2026.01.23.701329v1.abstract>

SYN-A, A Natural Olive-Derived Compound, Controls Insecticide-Resistant Cabbage Stem Flea Beetle

Researchers in the UK have discovered that a natural compound derived from olive oil can make a common insecticide effective again against a major agricultural pest. The study, led by Rothamsted Research and ApresLabs Ltd, focused on the cabbage stem flea beetle (CSFB), which has become a serious threat to oilseed rape production due to insecticide resistance.

The compound, known as SYN-A, works by blocking specific enzymes (cytochrome P450 and esterase) that resistant beetles use to detoxify pyrethroid insecticides. When combined with the pyrethroid lambda-cyhalothrin, SYN-A significantly boosts the treatment's effectiveness. In experiments, using only 20% of the standard insecticide dose mixed with SYN-A provided 2.2 times better pest control than the full insecticide dose used alone.

While the results offer a promising solution for farmers struggling with resistant pests, the research also identified a potential downside. Laboratory tests showed that the mixture can negatively impact a beneficial parasitic wasp, *Microctonus brassicae*, which is a natural predator of the adult flea beetle. The wasp lays its eggs inside the beetle, eventually killing it, and thus plays a valuable role in natural pest control.

Because of this risk to non-target species, the scientists stress the importance of careful implementation. Strategies such as precise application timing to avoid peak wasp activity are being considered. Overall, the discovery of SYN-A's synergistic effect aligns with broader goals of reducing insecticide use in agriculture, as it could lower the chemical dose required while still controlling resistant pests. However, the team notes that further large-scale field trials are necessary to confirm these findings under real-world farming conditions.

Original Link: <https://news.agropages.com/News/NewsDetail---56575.htm>
<https://news.agropages.com/News/NewsDetail---56575.htm>

OTHER THAN CROP BIOTECH

OIC Vaccine Manufacturers Group Convenes 4th Meeting to Enhance Health Sovereignty

February 09, 2026

H.E. Ambassador Aftab Ahmad Khokher participated in the 4th Meeting of the OIC Vaccine Manufacturers Group, organized by the OIC-COMSTECH in Islamabad on 9–10 February 2026. The meeting brought together vaccine manufacturers from OIC Member States such as Malaysia, Indonesia, Saudi Arabia, Iran, and Pakistan, along with representatives from key international and OIC institutions including SESRIC, SMIIC, IsDB, World Health Organization, and Gavi, the Vaccine Alliance. Muhammad Iqbal Choudhary welcomed participants and highlighted the importance of strengthening collaboration to ensure reliable vaccine access across member states, while Syed Mustafa Kamal emphasized the need for greater self-sufficiency and enhanced cooperation in vaccine production.

In his remarks, Ambassador Khokher reviewed the Group's progress since its establishment in 2014 and stressed the significance of revitalizing its role through continued engagement and new initiatives. He reaffirmed the commitment of the OIC General Secretariat to support the Group's activities. The meeting also served as an important forum for aligning vaccine standards and encouraging partnerships among manufacturers, with the broader goal of positioning OIC Member States as a leading force in global pharmaceutical development and innovation.

Original Link: <https://new.oic-oci.org/SitePages/NewsDetail.aspx?Item=3319>

Researchers Use Gene Editing to Separate Male and Female Mosquitoes

Researchers at the Hebrew University of Jerusalem have developed a new genetic approach to efficiently distinguish male and female mosquitoes, which could significantly improve large-scale mosquito control efforts. Current separation methods are time-consuming and difficult to expand, especially since control programs rely on releasing only male mosquitoes. In this study, scientists used CRISPR technology on the Asian tiger mosquito (*Aedes albopictus*), a known carrier of diseases like dengue, chikungunya, and Zika. They modified a pigmentation gene to create a clear visual difference: males appear dark while females are yellow.

The team also linked the pigmentation gene to a key sex-determining gene, enabling the conversion of females into functional males. These modified males behaved and reproduced normally, making them suitable for control programs. Additionally, the yellow-colored females produced eggs that could not survive dry conditions, unlike typical mosquito eggs. This trait could help reduce mosquito populations further. The researchers aim to enhance the survival of female mosquitoes under rearing conditions in future work, which would support more efficient mass production in biofactories.

ISAAA Link: <https://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=21658>

Original Link: <https://www.afhu.org/2025/12/22/spot-the-males-new-gene-editing-method-could-transform-mosquito-control/>

Genetically Modified H3N1 Reduces Virulence of Avian Influenza

Researchers from the National Veterinary Research Institute, the University of Edinburgh, and partner institutions have developed a genetically modified (GM) strain of the H3N1 (mH3N1) avian influenza virus to understand how specific genetic changes affect disease severity in chickens. The modified virus was designed to weaken key mechanisms linked to viral spread and tissue damage and was compared with a wild-type H3N1 (wH3N1) strain associated with a disease outbreak in Belgium.

The results showed that adult hens exposed to wH3N1 experienced severe effects, including a complete halt in egg production, widespread viral replication, and tissue damage in the reproductive tract, brain, and kidneys. In contrast, hens infected with the mH3N1 strain showed only mild and temporary drops in egg production, along with minimal viral presence in tissues. No mortality was recorded in either group, and younger chickens developed only subclinical infections. The findings show that targeted genetic modification can significantly reduce the virulence of avian influenza viruses. The study points to the loss of a specific neuraminidase (NA) glycosylation site linked to plasminogen binding and haemagglutinin (HA) cleavage as a key factor in weakening the virus. Researchers say this method could improve risk assessment, detection, and avian influenza control strategies in poultry.

ISAAA Link: <https://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=21672>

Original Link: <https://www.tandfonline.com/doi/full/10.1080/03079457.2026.2613964>

Engineered Algae Captures Microplastics from Water

Prof. Susie Dai, a researcher in the Department of Chemical and Biomedical Engineering at the University of Missouri, has developed a genetically engineered algae that can remove microplastics from wastewater by turning them into a biomass that is easy to collect and remove. The study, published in *Nature Communications*, is a pioneering, innovative solution for removing pollutants from wastewater.

Prof. Dai used genetic engineering to create a lab-grown algae that produces limonene, a volatile natural oil that makes the new algae water-repellent. Because microplastics are also water-repellent, they stick to the algae when they come into contact, clumping together and sinking as a solid mass that can be easily collected. The engineered algae can grow in wastewater, where it also absorbs excess nutrients and helps clean the water as it grows.

By removing the microplastics, cleaning the wastewater, and eventually using the removed microplastics to create bioplastic products for good, we can tackle three issues with one approach,” Prof. Dai said. While the research is still at an early stage, Prof. Dai hopes the process can eventually be integrated into existing wastewater treatment plants.

ISAAA Link: <https://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=21686>

Original Link: <https://engineering.missouri.edu/2026/lab-grown-algae-removes-microplastics-from-water/>

Researchers Develop Rapid Testing for Chicken Infectious Anemia Virus

Researchers from China have developed a fast and highly sensitive CRISPR-based test to detect Chicken Infectious Anemia Virus (CIAV), a disease that causes anemia and immune dysfunction, resulting in major economic losses for farmers. The new method uses the CRISPR-Cas12a system to improve accuracy and the rate of virus detection.

The study optimized a CRISPR-Cas12a-based fluorescence assay by integrating it with enzymatic recombinase amplification (ERA). This optimization allowed the test to detect extremely small amounts of viral genetic material. The researchers also created a CRISPR-Cas12a lateral flow assay to enable visual detection of target analytes without the need for complex laboratory equipment.

Results showed that the fluorescence assay could detect CIAV at levels as low as one copy per microliter, while the lateral flow test achieved reliable detection with a sensitivity of 10^3 copies per microliter. The system showed high specificity, with no cross-reactivity with other common chicken viruses. The researchers concluded that this CRISPR-based detection method offers a rapid, cost-effective tool for early CIAV detection to support better disease monitoring and control in poultry production.

ISAAA Link: <https://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=21693>

Original Link: <https://www.sciencedirect.com/science/article/pii/S003452882500520X>

NATIONAL NEWS

Federal Minister for National Food Security and Research, Rana Tanveer Hussain, Inaugurating the Speed Breeding and Intelligent IoT-Based Smart Glasshouse Facilities at the National Agricultural Research Centre (NARC), Islamabad

2 January 2026

National Agricultural Research Centre (NARC) has launched advanced Speed Breeding facilities for wheat and pulses, along with an Intelligent IoT-Based Smart Glasshouse, inaugurated by Rana Tanveer Hussain. The Speed Breeding technology significantly accelerates crop development by using controlled environments with extended photoperiods, optimized temperature, and humidity, enabling wheat to complete its life cycle in just 6–8 weeks and allowing up to six generations per year. This innovation reduces the traditional varietal development timeline by nearly half. More than 3,000 new wheat lines have already been developed, while Pakistan's first dedicated Pulses Speed Breeding Facility is advancing rapid improvement in chickpea, lentil, mung bean, and mash to strengthen food and nutritional security.

Additionally, the Minister inaugurated the Intelligent IoT-Based Smart Glasshouse at NIGAB, an automated research facility integrating IoT sensors, artificial intelligence, and data analytics to support genome-assisted breeding, stress research, and precision phenotyping. Under the leadership of Dr. Syed Murtaza Hassan Andrabi and the Pakistan Agricultural Research Council (PARC), these initiatives aim to modernize Pakistan's agricultural research system, enhance climate resilience, reduce import dependence, and ensure sustainable, data-driven crop improvement to secure long-term national food security.

Original Link:

<https://mnfsr.gov.pk/NewsDetail/ZWU3M2YzNzEtNGE1Yi00NmQyLThkM2MtZWRhMDBkYTlwZWYx>

[Yx](#)

Pak–China Innovation Agriculture Cooperation Centre launched in Kasur

January 18, 2026

China Machinery Engineering Corporation (CMEC) on Friday inaugurated the Pak–China Innovation Agriculture Cooperation Centre at Kasuri Farms in Kasur, Punjab, marking a major milestone in Pakistan–China cooperation in modern and technology-driven agriculture.

The centre is designed to promote cutting-edge agricultural research and technology transfer while strengthening collaboration in smart farming, biotechnology, seed development, mechanisation and climate-resilient agriculture. It will also focus on capacity building through structured farmer training programmes, knowledge exchange platforms and applied research initiatives, supporting sustainable food systems and rural development across Pakistan.

Speaking to *Gwadar Pro*, Alan Xi of the CMEC Group said the centre will encourage joint research publications, technology incubation and create opportunities for students, scientists and entrepreneurs, contributing meaningfully to food security and economic resilience.

“The centre will serve as a bridge between academia, industry and farmers, ensuring that innovation reaches the field and translates into real impact,” he noted.

Earlier, CMEC Group had also launched chili and sesame contract farming projects in Pakistan, aimed at improving crop productivity, ensuring quality seed supply and introducing modern farming practices. These projects focus on providing farmers with technical guidance, input support and assured market access, helping integrate local producers into regional and global agricultural value chains.

The experience gained from these contract farming initiatives is expected to complement the work of the newly established centre by offering practical, field-level insights and scalable models for agribusiness development.

Original Link: <https://gwadarpro.pk/2012811692010647553/pak%E2%80%93china-innovation-agriculture-cooperation-centre-launched-in-kasur>

Pakistani Scientists Test Space-Exposed Seeds to Improve Crop Varieties

January 22, 2026

Scientists in Pakistan are currently evaluating crop seeds that were sent into space to study the effects of cosmic radiation and microgravity on plant genetics. The initiative, a collaboration between the Pakistan Space and Upper Atmosphere Research Commission (SUPARCO) and China, involved exposing wheat, rice, and maize seeds to these unique conditions during a space mission.

Dr. Zahid Mahmood, Program Leader of the Wheat Program at the National Agricultural Research Centre (NARC), explained that this approach is a form of mutation breeding. Unlike traditional methods that use chemicals or ground-based radiation to induce genetic changes, this technique leverages the natural mutagenic environment of space. The goal is to introduce new genetic variations that could lead to desirable traits in crops.

After the seeds returned to Earth, they were initially processed in Karachi before being handed over to researchers. To speed up the research process, the seeds were first grown in NARC's Speed Breeding Facility, which allows for multiple plant generations per year, bypassing the limitations of traditional field trials that only permit one cycle annually. The resulting plants have now been moved to field trials for comprehensive evaluation.

Researchers are monitoring the plants for a range of beneficial characteristics, including height, disease resistance, grain attributes, and overall yield. They are also employing modern tools like drones with multispectral sensors to quickly and efficiently assess these traits across large trial plots.

Dr. Mahmood emphasized that the work is still in an experimental phase. Not all genetic mutations are helpful, and a lengthy selection process is necessary to identify any lines with improved qualities. The results from these current trials will be crucial for planning future space missions, ensuring that the most suitable crop varieties are selected for exposure.

Original Link: <https://globaltimes.com.pk/index.php/2026/01/22/pakistani-scientists-test-space-exposed-seeds-to-improve-crop-varieties/#respond>

CEMB Signs Two Landmark Agreements to Advance Crop Research

January 16, 2026

Punjab University Centre of Excellence in Molecular Biology (CEMB) signed two significant research and development agreements aimed at strengthening agricultural innovation in Pakistan. The agreements were signed by Punjab University Vice Chancellor Prof Dr Muhammad Ali. The first agreement focuses on the development of improved cotton varieties and was signed with Dr Muhammad Idrees Khan, Secretary, Pakistan Central Cotton Committee (PCCC), Headquarters, and Dr Sabahat Hussain, Director, Central Cotton Research Institute (CCRI), Multan. This collaboration is expected to enhance cotton productivity and support the national cotton sector through advanced research and breeding strategies. The second agreement was signed with Dr Jilal Idrees, CEO of Gene Tech Lands, to jointly work on the development of hybrid crop varieties, particularly cotton and maize, using modern biotechnological approaches. The signing ceremony was attended by Director CEMB Prof Dr Moazur Rahman, Prof Dr Bushra Rashid, Prof Dr Abdul Qayyum Rao, Dr Allah Bakhsh, and Mr Muhammad Ejaz, Head of Administration, CEMB. The agreements mark an important step toward fostering academia–industry collaboration and promoting sustainable agricultural development in Pakistan.

Original Link: <https://ibitresults.pu.edu.pk/home/section/exam/16794>

Sindh Govt. Plans Dedicated Floricultural Farms to Diversify Agriculture

January 22, 2026

The Sindh government has announced a new initiative to establish dedicated floriculture farms across the province, aiming to diversify agriculture and create new income sources for farmers. The project, led by the Agriculture Extension Sindh department, seeks to develop the floriculture sector as a high-value and climate-resilient alternative to traditional farming.

According to Director Ghulam Mustafa Nangraj, the province possesses the necessary climatic diversity, fertile land, and farming expertise to build a thriving flower industry. The plan involves creating farming clusters in key horticultural districts like Mirpurkhas, Tando Allahyar, Badin, and Thatta. These farms will focus on producing cut flowers, potted plants, nursery items, and value-added goods such as essential oils and dried flowers.

The initiative is designed to introduce modern agricultural practices, including greenhouse technology, drip irrigation, and improved post-harvest facilities, to enhance both quality and yield. A core objective is to help farmers shift away from water-intensive conventional crops toward floriculture, which can offer higher returns per acre while using less water.

To ensure its success, the program will prioritize training for smallholder farmers. Extension services will teach modern techniques in areas like pest control, greenhouse management, and nursery operations. The goal is to equip farmers with the skills and infrastructure needed to compete in both domestic and international markets.

Officials also highlighted the potential for floriculture to generate employment, particularly for women and young people, in areas ranging from cultivation to processing and marketing. The project will also foster collaboration with research bodies and the private sector to build a stronger

agribusiness ecosystem, including cold storage and value-addition facilities to help secure better prices for produce.

Original Link: <https://www.app.com.pk/national/sindh-govt-plans-dedicated-floricultural-farms-to-diversify-agriculture/>

Pakistan, Indonesia Strengthen Cooperation in Vaccine Production

January 19, 2026

Federal Minister for National Health Services, Regulations and Coordination Syed Mustafa Kamal met with the President Director of Indonesia's leading vaccine manufacturer PT Bio Farma, during his visit to Indonesia to enhance bilateral cooperation in vaccine production, according to Associated Press of Pakistan (APP). According to the Ministry of Health on Monday, significant progress was made in advancing vaccine collaboration between the two countries. Discussions focused on technology transfer and potential partnerships between Bio Farma and the National Institutes of Health (NIH) Pakistan. The Federal Health Minister emphasized the importance of close and sustained cooperation between Pakistan and Indonesia to achieve self-sufficiency in local vaccine production. He noted that Pakistan to benefit from Indonesia's experience and expertise in the vaccine sector, adding that such initiatives would help promote indigenous vaccine manufacturing in Pakistan.

Mustafa Kamal reaffirmed the government's commitment to ensure the safe, timely, and quality medical facilities for the public, underscoring that international collaboration remains a key pillar.

Original Link: <https://special.azertag.az/en/xeber/3973567>

Pakistan Can Achieve Fast-Track Transformation In Agriculture Through Chinese Partnership

January 19, 2026

At a recent investment conference in Islamabad, Prime Minister Shehbaz Sharif emphasized that Pakistan's agricultural sector, which employs a significant portion of the population, has the potential for rapid transformation through the adoption of modern technology and stronger collaboration with China.

The Prime Minister highlighted the need to boost crop yields per acre by implementing advanced techniques, improving water management, and using limited land more efficiently. He stressed that achieving sustainable growth requires coordinated action between government levels, the farming community, and scientific researchers, with a focus on developing supply chains and adding value to products to enhance global competitiveness.

A key initiative mentioned was the training of 1,000 Pakistani graduates at top Chinese agricultural institutions. These individuals have now returned and are expected to assist local farmers in improving quality and productivity. The Prime Minister noted that by leveraging Chinese expertise, Pakistan should aim for a trade surplus in agriculture, achieved through higher yields and superior quality.

Chinese Ambassador Jiang Zaidong expressed China's commitment to deepening technology-driven agricultural cooperation. He stated the goal of increasing bilateral agriculture trade to around \$1 billion while ensuring a surplus for Pakistan. He also acknowledged Pakistan's improving economic indicators, including reduced inflation and steady growth.

The conference underscored the next phase of the China-Pakistan Economic Corridor (CPEC), which will prioritize agriculture, information technology, and mineral development. Pakistani officials assured Chinese investors of full regulatory support, aiming to create an environment where joint ventures can thrive and innovate.

Original Link: <https://www.app.com.pk/national/pakistan-can-achieve-fast-track-transformation-in-agriculture-through-chinese-partnership-pm-2/>

CEMB Organized Seminar on "Biotechnology-Driven Agricultural Opportunities Between SriLanka, and Pakistan

February 06, 2026

A seminar titled “Biotechnology-Driven Agricultural Opportunities between Sri Lanka and Pakistan” was organized at the Centre of Excellence in Molecular Biology (CEMB) on 09 February 2026 to highlight shared challenges and collaborative prospects in agricultural biotechnology between the two countries.

Original Link: https://2fjournals.pu.edu.pk/home/section/exam/16874?utm_source=chatgpt.com

COMSTECH Research Opportunities

OIC-COMSTECH & CEMB Punjab University Research Fellowship Program for OIC Member States



OIC-COMSTECH, in collaboration with the **Centre of Excellence in Molecular Biology (CEMB)**, **University of the Punjab**, is launching a **Research Fellowship Program** aimed at providing advanced laboratory training and research opportunities to young scientists from OIC Member States. The program seeks to strengthen technical expertise and promote innovation in molecular biology, biotechnology, and biomedical sciences. The fellowship has a **duration of two months**, with **five fellowships awarded annually**.

Fields	Eligibility	Benefits Covered
<ul style="list-style-type: none">Natural SciencesApplied Biological SciencesMicrobiologyVirologyMedicineMolecular Biology	<ul style="list-style-type: none">Nationality Nationals of OIC Member States & Observer StatesEducation MS onwardsAge 22-45 onwards	<ul style="list-style-type: none">BY OIC-COMSTECH<ul style="list-style-type: none">Round Air TripLiving ExpensesBY CEMB<ul style="list-style-type: none">AccommodationLaboratory Training & Mentorship
Duration <ul style="list-style-type: none">2 Months		
Fellowships <ul style="list-style-type: none">5 Fellowships Annually		

Registration Link: <https://form.jotform.com/260491633748464>

Posted on February 28, 2025

ICGEB-COMSTech Research Grants 2026 CRP – Collaborative Research Programme



International Centre for Genetic
Engineering and Biotechnology



Funding opportunities are made available through the Collaborative Research Programme (CRP) – ICGEB Research Grants, a dedicated source of funding that aims to finance projects addressing original scientific problems of particular relevance for the host country and of regional interest. The ICGEB-COMSTech CRP scheme offers one-year Research Grants dedicated to women investigators in ICGEB-COMSTech common Member States to conduct original research projects of national/regional relevance. Through these grants, beneficiary research institutes will be supported in the creation and/or upgrading of appropriate research facilities.

Closing Dates for Applications:

30 April 2026, 23:59 CET

Original Link: <https://www.icgeb.org/grants/icgeb-comstech-research-grants-2026-crp-collaborative-research-programme/>

UPCOMING INTERNATIONAL BIOTECH EVENTS

- **International Conference on Biomedical Innovations in Bioinformatics and Biotechnology (ICBIBB).**
April 3rd, 2026 Hamburg, Germany.
(<https://internationalconferencealerts.com/eventdetails.php?id=100201848>)
- **16th International Conference on Biotechnology**
April 16-17, 2026 Rome, Italy.
(<https://biotechnologycongress.pulsusconference.com/>)
- **5th World Congress on Gynecology, Obstetrics & Women's Health**
April 13-15, 2026 Singapore.
(<https://environmentalscience.inovineconferences.com/>)
- **InSciTech Meet on Stem Cell and Regenerative Medicine (IMSTEMCELL2026)**
April 20-22, 2026 Rome, Italy.
(<https://inscitechsummits.com/2026/stem-cell>)
- **SynBioBeta 2026: The Global Synthetic Biology Conference**
May 4-7, 2026 San Jose, US
(<https://www.synbiobeta.com/events/synbiobeta-2025>)
- **20th International Biotechnology Symposium and Exhibition.**
June 28-July 2, 2026 Kobe, Japan.
(<https://iupac.org/event/20th-international-biotechnology-symposium-and-exhibition/>)
- **Swiss Biotech Day 2026**
May 4-5, 2026 Basel, Switzerland.
(<https://swissbiotechday.ch/>)
- **Bio-IT World Conference & Expo**
May 4-5, 2026 Boston, MA, USA
(<https://www.bio-itworldexpo.com/>)
- **American Society of Clinical Oncology (ASCO) Annual Meeting**
May 29-June 2, 2026 Chicago, IL, USA
(<https://meetings.asco.org>)

UPCOMING NATIONAL BIOTECH EVENTS

- **International Conference on Regenerative Agriculture, Soil Health and Indoor Farming (ICRASIF)**
April 24, 2026, April, Pakistan.
(<https://www.allconferencealert.com/event/2183994>)
- **International Conference on Computational Metabolic Engineering and Biotechnology (ICCMEAB).**
May 18, 2026 Islamabad, Pakistan.
(<https://internationalconferencealerts.com/eventdetails.php?id=100662794>)
- **International Conference on Bioinformatics and Biomedical Imaging (ICBIBI).**
June 12-13, 2026 Faislabaad, Pakistan.
(<https://conferencealerts.co.in/event/100664900>)
- **International Conference on Marine Biotechnology and Ocean Engineering Applications (ICMBOEA)**
May 30, 2026 Lahore, Pakistan.
(<https://internationalconferencealerts.com/eventdetails.php?id=100669142>)
- **International Conference on Computational Metabolic Engineering and Biotechnology (ICCMEAB)**
June 10, 2026 Rawalpindi, Pakistan.
(<https://internationalconferencealerts.com/eventdetails.php?id=100662810>)
- **ICOSMAS 2026 - International Conference on Orthopedics Sports Medicine and Arthroscopic Surgery**
May 13, 2026 Sargodha, Pakistan.
(<https://www.conferencealert.com/eventdetail/2060374>)
- **International Conference on Assessment, Evaluation, and Lifelong Learning Outcomes.**
June 12-13, 2026 Karachi, Pakistan
(<https://conferencenext.com/event/100603619>)

PABIC in Photographs (2010 TO 2012)



PABIC in Photographs (2010 TO 2012)

