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NATIONAL NEWS

GM crops

The government must support the agricultural sector by allocating funds and resources to explore GM crops and genotypes of other crops that can lead to a greener and prosperous Pakistan.

To fight the impact of climate and environmental change on crops, Pakistan must refocus on the research of a variety of crops. Around the world, genetically modified (GM) crops are used to improve agricultural activities and combat climate change. Considering that Pakistan is heavily reliant upon agriculture, many farmers have favored the use of GM crops i.e., cotton and maize, which have been our major exports.

These crops possess many novel properties including herbicide and virus tolerance, resistance to drought and salinity, and useful excretion during growth. Although the use of GM crops remains a contentious issue, it is considered as the solution to several food and agricultural problems.

However, it threatens biodiversity because of the adverse effects of the crops, and the long-term impact it has on humans remains unknown.

Original Link: https://www.pakistantoday.com.pk/2022/04/06/gm-crops/

Malawian Cotton Farmers Benefitting with Bt Cotton Seed

Speaking in Lilongwe on Wednesday 30 March, 2022 at a media workshop, NCST Chief Research Services Officer, Lyson Kampira, said since the introduction of Biotech cotton, the yields for farmers who adopted the seed have been increased to 800 kgs per hectare from 400 kgs per hectare which is a big improvement.

Kampira also noted that as NCST together with African Agricultural Technology Foundation (AATF), they have an open forum for agriculture biotechnology and its objectives is to put in place measures in order to ensure that they create a platform where scientists and Journalists have an opportunity to discuss important information about technology and this is based on true facts which can help to promote biotechnology activities in the country.

“If we combine scientists and Journalists it means the true information that our scientists generate during their research can easily be communicated to the general masses and can be easily understood as you know journalists have that responsibility of transmitting information to the general public and scientists have that capability of creating new knowledge which is important.

In his remarks, a Senior Lecture in Biotechnology at LUANAR Bunda campus, Abel Sefasi, noted that biotechnology in agriculture has come to solve challenges that were being solved by other approaches but biotechnology works in efficient manner.

Original Link: https://malawi24.com/2022/04/02/malawian-cotton-farmers-benefitting-with-bt-cotton-seed/

Precision Agriculture can Enhance Productivity: Chairman PCSIR

Abidi was of the view that trained manpower and modern innovative technology play an important role not only to enhance productivity of the agriculture sector but will also be helpful for food security in the country. Syed Hussain Abidi lauded the initiatives of PMAS-AAUR to attract farming community to witness demonstrative exhibitory

attractions at the farm. To increase per acre production, he urged the faculty members to do their level best to solve the problems faced by the farming community to become a self-sufficient country.

Addressing the participants as chief guest here while inaugurating the wheat & Brassica harvesting at Pir Mehr Ali Shah Arid Agriculture University Rawalpindi (PMAS-AAUR) Research Farm, Koont, Dr. Syed Hussain Abidi has said that precision agriculture can help enhance agricultural productivity as well as water use efficiency.

Original Link: https://pakobserver.net/precision-agriculture-can-enhance-productivity-chairman-pcsir/

Nigeria Starts National Performance Trials for TELA Maize

Nigeria will start the national performance trials for drought tolerant and insect resistant maize known as TELA. This is a huge step for farmers towards better pest resistance and productivity.

TELA maize, which exhibits resistance to fall armyworm, stem borers, and tolerates moderate drought, was developed by researchers at the Institute for Agricultural Research, Ahmadu Bello University. The name was derived from the Latin word *tutela*, which means protection. TELA maize underwent confined field trials and received environmental approval for evaluation and open cultivation from the government of Nigeria on October 8, 2021.

The national performance trials will involve 180 randomly chosen farmers from 10 states with varied agro-ecological conditions. The trials aim to confirm the efficacy of the technology and show the adaptability of the variety. The results of the trials will also be used in the application for commercial approval of TELA maize. To date, Nigeria has approved GM cotton and cowpea, and TELA is the first maize variety that is drawing close to adoption. TELA maize is already adopted by farmers in South Africa.

Read more from AATF and Alliance for Science.

European Commission Authorizes 3 GM Crops; Renews Authorization for GM Cotton

The European Union has authorized three genetically modified (GM) crops and also renewed the authorization for GM cotton used for food and animal feed. The three GM crops include oilseed rape, cotton, and soybeans.

GM oilseed rape 73496, GM cotton GHB811, and GM soybeans GMB151 are all modified for herbicide tolerance. All three GM crops have gone through a comprehensive and stringent procedure, including a favorable risk assessment by the European Food Safety Authority (EFSA). The authorization for the three crops and the renewal for GM herbicide cotton GHB614 are valid for 10 years and do not include cultivation.

In its Scientific Opinions for each of the three GM crops, EFSA concluded that they are as safe as their conventional counterpart and the tested non-GM reference varieties with respect to the potential effects on human and animal health and the environment. The Authority also concluded that the consumption of the three crops does not represent any nutritional concern for humans and animals. EFSA's Scientific Opinion for the renewal of cotton GHB614 concluded that the application did not contain evidence for any new hazards, modified exposure, or scientific uncertainties that would change the conclusions of the original risk assessment on GM cotton GHB614, which was adopted by the Authority in 2009.

Pakistan, China to Cooperate in Agriculture Sector

The cooperation between China and Pakistan in the agricultural sector can greatly help Pakistan modernise and boom in this sector, Pakistani Ambassador to China Moin ul Haque said.

"Pakistan was keen to learn from Chinese experience and expertise for modernising the agriculture sector in Pakistan, with a focus on corporate farming, new seed development for enhancing crop yield, the introduction of new varieties of agriculture products, establishing agro-industry and setting cold chain network," Moin ul Haque stated.

Islamabad In his remarks, the ambassador highlighted the growing significance of the agricultural cooperation between the two countries as the agricultural sector of Pakistan is the backbone of the national economy and is important for food security.

The ambassador also praised China for its progress in the agriculture sector and believed Pakistan could modernise this sector under the China-Pakistan Economic Corridor (CPEC).

Original Link: https://www.thenews.com.pk/print/950879-pakistan-china-to-cooperate-in-agriculture-sector

INTERNATIONAL NEWS

Banana tissue culture plants from South Africa set to give Ecuador industry a boost

Du Roi Laboratory based in Letsitele, Limpopo Province of South Africa, is a leading banana tissue culture facility and supplier to some 25 countries, has recently supplied Ecuador with this country's first batch of Formosana, a Fusarium Oxysporum Cubense Tropical Race 4 (FOC TR4) Panama disease tolerant banana variety.

"It is important to note that Formosana has an intermediate resistance to TR4," says Suné Wiltshire, Du Roi Laboratory General Manager. "It shows less severe symptoms or damage than susceptible varieties when grown under similar environmental conditions and inoculum pressure. The use of a tolerant TR4 variety like Formosana should form part of an integrated approach to the management of TR4." According to Wiltshire the big advantage of Formosana is that the shape and taste of the bananas is still the same and that the product therefore remains very acceptable for the export market.

Original Link: https://www.freshplaza.com/article/9418217/banana-tissue-culture-plants-from-south-africa-set-to-give-ecuador-industry-a-boost/

AGRI BIOTECH NEWS

AgriTech has Great Potential to Flourish in Pakistan

Pakistan's economy has flourished a lot in the last few years as the government had given great incentives in every sector to bring in investment and new technology to improve the ways and quality of work. There are many hindrances in digitizing the whole value chain and giving awareness to the farmers to get access to digital insurance which can be addressed through the combined efforts of the different related institutions.

The stakeholders from all the agricultural sectors need to work in collaboration with the agri-tech companies looking towards the application of the technology to ease the farmers. In addition to these many other agricultural insurance products and crop insurance schemes have been brought forward by SECP. One more big advancement in the agricultural sector is the introduction of Collateral Management Companies Regulations to give awareness about the concept of warehousing of agricultural products. Parametric insurance provides protection to the insured products

based on parameters such as crop yield in a unit area where a technology-based solution has been applied. The few issues in the sector are the minimal use of technology, the large population, the threats posed by the climate transformation which is quite abrupt these days and the lack of access to formal credit.

He has expressed his views that Agri-Tech market has received many developments but still it has massive potential to flourish on account of regulators' receptive attitude towards fintech, internet penetration, high teledensity and improvements in the electronic payment infrastructure. Chairman Securities and Exchange Commission of Pakistan addressed the people in a hybrid conference of "AgriTech: Empowering the Rural Farmers' that was hosted by the Pakistan Fintech Network and Pakistan Microfinance Network. More than 60 farmers in Rahim Yar Khan covering a total area of 168 acres have been given insurance and they are in the experimental phase.

Original Link: https://www.phoneworld.com.pk/agritech-has-great-potential-to-flourish-in-pakistan/

Rethinking Agricultural Priorities in Pakistan

Fixed cropping patterns, reliance on few major crops, narrow genetic pools, poor seed quality and inefficient water management practices are often cited as major problems which continue to dampen agricultural productivity in Pakistan today.

Large and mid-level farmers in the country continue engaging in wasteful practices such as flood irrigation to grow crops like rice, and they have recklessly drained the underground aquifers using pumps to water their crops.

Besides ensuring that landless agricultural workers are paid fairer wages, there is need to craft subsidy schemes and other incentives which focus on making smaller farmers actively involved in making agriculture more productive, resilient and sustainable. To better contend with the varied challenges facing our agricultural sector, it is necessary to rethink the top-down process of agricultural development which continues to bypass poor and landless farmers.

Original Link: https://tribune.com.pk/story/2352580/rethinking-agricultural-priorities-in-pakistan

Use of Modern Tech to Improve Cotton Crop

Agricultural Secretary Punjab Asad Rahman Gilani, Dean Life Sciences Punjab University Dr Javed Iqbal Qazi, Dean Institute of Agricultural Sciences Dr Saleem Haider, Sindh Seed Council member Nadeem Shah, representatives of more than nine seed companies, growers and farmers from across Pakistan, senior professors from educational and research institutes, faculty members and researchers were present on this occasion.

Later, Prof Dr Abdul Qayyum Rao, Prof Dr Bushra Rashid, Dr Allah Bakhsh, Prof Dr Tayyab Husnain, Prof Dr Idrees Ahmed Nasir and others shared the CEMB cotton varieties' success story with the audience and briefed them about constraints in cotton development and the NBC guidelines that should be followed for cultivation of transgenic varieties.

Origianl Link: https://www.thenews.com.pk/print/944348-use-of-modern-tech-to-improve-cotton-crop

Experts Seek Moratorium on GM Crops Release

A Molecular biologist, Dr. Kashima Ifeanyi, who said this during a sensitisation workshop, organised for farmers by the Health of the Mother Earth Foundation (HOMEF) in Abuja, challenged the National Biotechnology Development Agency and principal researchers behind the production of BTbeans to a national debate to establish sufficient grounds why a decade of moratorium should not be placed on further release of the variety.

He said: “We want a situation whereby when I go to the market, I will have an option of buying either GM beans or non-GM beans because if that is not put in place, we are destroying our population, hence we must put in place a moratorium.” Ifeanyi, who also stressed the need to appraise the damage done by GM crops to human health, the environment and biodiversity, however, lamented the unwholesome release of GM crops in the country without the knowledge of most Nigerians, saying it’s important to sensitise Nigerians on what has happened to the country’s food system and the steps to be taken.

Original Link: https://guardian.ng/features/experts-seek-moratorium-on-gm-crops-release/

Govt should focus on Sustainable Growth Rate Instead of Controlling Current Account Deficit, Inflation says Tarin

Tarin, while answering the question on current account deficit, said that it was at $12 billion at the end of nine months, the main reason has been increase in imports which mainly include increase in petroleum products of $6.5 billion, vaccines $3 billion, imported coal $1 billion and crude oil $1 billion.

Tarin said that exports have increased by 25 percent and considering Pakistan is in a growth stage, had the international commodity prices remained stable the country would have had a current account surplus instead of a deficit.

Shaukat Tarin while addressing a press conference said that sustainable growth is imperative and should be the main focus instead of current account deficit and inflation which will reduce eventually.

Original Link: https://profit.pakistantoday.com.pk/2022/04/13/govt-should-focus-on-sustainable-growth-rate-instead-of-controlling-current-account-deficit-inflation-says-tarin/

In Boost for Agriculture, India Exempts Gene Edited Crops from Biosafety Assessment

In a bold move with far-reaching consequences for the country’s agricultural development, India’s government has issued an order exempting certain gene-edited plants from stringent biosafety regulations.

Indian public sector research laboratories are already using gene editing to develop a number of improved crop varieties, including nutritionally improved oil seeds; rice and maize that can tolerate drought stress; beta carotene-rich banana; high oleic and low linoleic acid ground nuts; blast-resistant rice; high-yielding rice that is nitrogen- and water use-efficient; low-phytate rice; anthracnose-resistant pepper; and biotic and abiotic stress-tolerant tomato.

Indian farmers and seed companies have waiting for a much-needed boost for the country’s agriculture sector since the approval of genetically modified cotton, the country’s first GM crop, 20 years ago.

The recent announcement on gene-edited plants is expected to give the country’s seed industry and farmers a tremendous boost as the technology has the potential to develop new varieties more quickly.

Original Link: https://allianceforscience.cornell.edu/blog/2022/04/in-boost-for-agriculture-india-exempts-gene-edited-crops-from-biosafety-assessment/

HEALTH BIOTECH NEWS

Barley Variety Modified to Work With Fungi

British plant scientists plan to field test a new variety of barley that is designed to co-operate with beneficial fungi in the soil.

This month in England, researchers from the University of Cambridge Crop Science Centre will seed a barley variety that has been genetically modified so it can better interact with mycorrhizal fungi.

"Working with natural and beneficial microbial associations in plants has the potential to replace or greatly reduce the need for inorganic fertilizers, with significant benefits for improving soil health," said Giles Oldroyd, a crop science professor and lead researcher for the Crop Science Centre project.

Oldroyd has spent years designing cereal crops to become more like soybeans and peas: legume crops that can fix their own nitrogen.

Original Link: https://www.producer.com/news/barley-variety-modified-to-work-with-fungi/

India Decides Gene Edited Crops and Foods will not be as Tightly Regulated as GMOs

A key change in rules notified on [March 30] will allow genome-edited plants, or organisms without any "foreign" genes A to be subjected to a different regulatory process than the one applied to genetically engineered products — a move likely to add to a polarising debate around technologies such as CRISPR.

One scientist working with GM technologies said the changes will exempt two categories of genome-edited products — in which genes are tweaked but not inserted from another organism — from being treated as transgenic products.

"With this, India now has a separate regulatory process for such technologies that takes them out of the purview of Genetic Engineering Appraisal Committee or GEAC," said Bhagirath Choudhary of the South Asia Biotechnology Centre, which advocates GM technologies.

Original Link: https://geneticliteracyproject.org/2022/04/04/india-decides-gene-edited-crops-and-foods-will-not-be-as-tightly-regulated-as-gmos/

Nigeria: Genetically Modified Crops Harmful for Human Consumption, Group Insists

These organic fertilisers can be used to nurture the soil and also produce good food which would be good for each and every one of us." Further commenting on the health implications of GMO-enhanced produce, she said, "Recently, we've been seeing too many cases of cancers, infections and skin diseases that we can't know where they are coming from and most of these things can sometimes be attributed to the kinds of food we eat- too much of chemicals.

But he said the organic farming approach, which is a subset of agroecology, offered the safest and most sustainable agriculture that is both beneficial for humans and the environment." Speaking at the practical agroecology training for farmers and Civil Society Organisations (CSOs) in Abuja, Adeoluwa, who is also the Continental Coordinator, Network of Organic Agriculture Researches in Africa, further said Nigerian agricultural exports to Europe and other international markets had often been rejected over the use and abuse of chemicals especially in preserving the produce.

Original Link: https://allafrica.com/stories/202204130047.html

Regenerative Agriculture and Soil Health are key for the future of Sustainable Agriculture

ENVIRONOC 401 allows the farmers to establish larger and more diverse populations of beneficial microbes in their fields, optimize the rhizosphere with a more robust and efficient plant and microbe relationship to improve growing conditions and improve nutrient release, and management through microbial activity, enhancing overall soil productivity.

Biodyne is a USA based environmental biotechnology company focused on harnessing the power of naturally occurring, beneficial microorganisms and other sustainable technologies for use in a variety of agricultural and environmental applications to restore soil health and renew soil microbes in the soil.

Farley's research, he saw the soil microbial activity at play and his endeavor became to use nature to replenish the soil and to strengthen its capability in order to improve plant health which laid the foundation of Biodyne World in 1986.

Original Link: https://pk.mashable.com/social-good/15635/regenerative-agriculture-and-soil-health-are-key-for-the-future-of-sustainable-agriculture

Researchers investigate garlic's hidden powers

Nurulita's work shows these elite garlic selections are still infected by the virus complement and we don't know why that is occurring." Nurulita also investigated the viruses concentrations using next-generation sequencing, and mapped the full genomes of the viruses.

"I did not find any significant differences in the viruses levels and was unable to determine a clear-cut difference between the two different lines of elite and poor performing garlic seed," Nurulita said.

"All Australian commercial garlic varieties have viruses, which doesn't seem to affect taste or nutrition, but does have an impact on the crop's yield."

Original Link: https://phys.org/news/2022-04-garlic-hidden-powers.html

Protein Discovery Reveals How Fungi Bypasses Plant Defenses

A research team led by the U.S. Department of Agriculture's Agricultural Research Service and Washington State University (WSU) found that the Sclerotinia sclerotiorum fungus uses a protein to bypass the natural defenses of plants and cause extensive rot in hundreds of broad leaf plant varieties.

According to Weidong Chen, corresponding author of the paper published in Nature Communications, Sclerotinia causes stem rot on more than 600 plant species, including peas, lentils, canola, potatoes, soybeans, and many other broad leaf crops. Plants rot when a pathogen degrades their cell walls, breaking down the plant by secreting chemicals called polygalacturonases (PG). In 1971, it was discovered that plants protect themselves using an inhibitor protein called PGIP. Since that discovery, scientists have wondered how certain pathogens, such as the Sclerotinia fungus, get around the inhibitor protein to cause extensive rot.

Chen and his colleagues discovered that a protein secreted by Sclerotinia cells, called SsPINE1, inactivates a plant's defenses. To prove that SsPINE1 allowed Sclerotinia to bypass plant defenses, the team deleted the protein in fungi in the lab, which dramatically reduced its impact.

"It's exciting that we found this new protein," said Wei Wei, a WSU post-doctoral researcher and first author of the paper. "We hope that this helps increase resistance to fungal infections in plants around the world."

For more details, read the news article in WSU Insider.

OTHER THAN CROP BIOTECH NEWS

Artificial Intelligence in Agriculture can help Revolutionize Economy: MNSUAM VC

The artificial intelligence in agriculture sector is playing important role in resolving problems, including management of crops, soil, water, climate changes and even marketing of agricultural products in different developed countries of the world.

MULTAN: Vice Chancellor of Muhammad Nawaz Sharif University of Agriculture Multan (MNSUAM) Asif Ali Sunday said that artificial intelligence could help improve agriculture sector by providing facilities in different ways.

However, this very much important sector is faced with many challenges including poor quality seeds, substandard fertilizers, fake pesticides, attack of different diseases on crops, low fertility of soil, weeds, excessive use of pesticides as well as some other toxic chemicals and above all, conventional ways of agricultural practices", remarked Asif.

Original Link: https://www.brecorder.com/news/40166426/ai-in-agriculture-can-help-revolutionize-economy-mnsuam-vc

Climate-smart initiatives

Local government, communities and other key stakeholders like the University of Agriculture, Faisalabad, Potato Research Institute, Sahiwal, Department of Agriculture Extension, Potato Research and Development Board and Potato Growers Cooperative Society Pakistan have been engaged for larger ownership of the best practices and to replicate them.

Some 24 demonstration plots have been established in the project district by CABI master trainers and Wageningen University experts that represent Dutch best practices in climate smart potato production.

Scientific crop research, knowledge development and its dissemination to the concerned at all tiers of governance for urgent action and implementation plans could save the 230 million people of Pakistan, an agricultural country that is fast becoming food insecure.

They are mainly being promoted by the Food and Agricultural Organization of the United Nations and other international organizations such as the Centre for Agriculture and Biosciences International (CABI), an intergovernmental organization promoting scientific research and practices.

The urgent tasks for the relevant federal and provincial ministries and their subordinate institutions in provinces should be to enhance their efforts to seek more international technical support for scientific research and farmers' capacity building for backbone crops such as wheat, rice, sugarcane and potato.

Original Link: https://www.thenews.com.pk/print/951381-climate-smart-initiatives

Sorghum Cooperation: A New Milestone in CPEC

As agricultural countries China and Pakistan are currently facing the same challenges – growing food demand and tight agricultural land jointly threaten food security.

“The tannin content of domestically grown sorghum is generally around 1.3% to 1.6%, however, according to trial data, benefiting from local excellent light and temperature conditions, the tannin number can climb up to 2.3%. Given that the important role of tannin in food processing and industrial production, we can promote the cultivation of these varieties in Pakistan, and then ship them back to China for further processing.” At the symposium a few days ago, Yuan not only systematically introduced the preliminary results of planting trials, but also pointed out the multiple economic benefits brought by possible large-scale planting in the future.

At a time when the world is facing the dual challenges of the epidemic and food crisis, it is a win-win choice to incorporate this multi-purpose crop into the CPEC cooperation framework and add another layer of guarantee to the food security of China and Pakistan,” which was the consensus shared by experts on the Symposium on Sorghum Industry Development of China and Pakistan organised recently.

Original Link: https://tribune.com.pk/story/2353070/sorghum-cooperation-a-new-milestone-in-cpec

Water Table Sinking, but Push to Agri Diversification Still Missing in Punjab

Bathinda: Academics and agriculture experts are debating the possibility of crop diversification in Punjab, as raw cotton prices breach the Rs 10,000-per-quintal mark and a relentless campaign is already underway to save water in the agrarian state.

A reason for experts to hope for farmers to shift to cotton is the going rate of the cash crop, whose market price even touched Rs 12,000 this procurement season. Loans to pay lease While the next crop-sowing season will start in a few days, many farmers whose crop was damaged by pink bollworm are still awaiting compensation, as they need the money for purchasing seeds and preparing fields.

The way farmers have got returns from cotton minus the pest attack, it is the best alternative to paddy in southern Punjab,” says Punjab Agriculture University director (research) Ajmer Singh Dhatt. But, looking at the way the state government tackled the damage to cotton crop due to pink bollworm, it seems the government might find it tough to achieve the goal. It is being felt farmers who had grown the crop by taking land on lease have been hit the worst by the pest attack. “There is lot of potential to increase area under mustard in the state and cotton in south Punjab. When it comes to central schemes, the Pradhan Mantri Fasal Bima Yojna (PMFBY) is not applicable in Punjab, as the state government has, in the past, claimed that it will start its own crop insurance scheme.

Original Link: https://timesofindia.indiatimes.com/city/chandigarh/water-table-sinking-but-push-to-agri-diversification-still-missing-in-punjab/articleshow/90887024.cms

Investing In Technology Key in Quality Cotton Production

Addressing cotton farmers from Malindi in Kilifi County who had toured the firm today, Tejal said her company had to venture into more innovative manufacturing technologies to streamline production and improve on quality. Their sentiments were echoed by their Meru counterparts who said they have been pushing for the County government of Meru to pass a motion and adopt cotton as their cash crop saying by doing so will encourage many farmers as the market was assured.

Thika Cloths Mills CEO Tejal Dodhia said the government’s continued support to the local cotton manufacturing industries has pushed farmers to embrace cotton farming and eased supplies to their firms. As demand for fine cotton in the country rises and the “Buy Kenya, Build Kenya” initiative takes shape, textile industries are investing heavily in new machinery and technology thus opening doors to improved quality, enhanced profits and competitiveness in the global market.

One of those companies is Thika cloths Mill, a major textile industry in the country which is reaping big from increased cotton supplies after entering into agreement with farmers to buy all their produce. Her company has in the past few years helped farmers grow the crop, after coming up with vigorous cotton reviving campaigns and distributing free seeds and pesticides amongst other farm inputs. Mwangemi who led the farmers from Malindi and Kilifi said cotton farming had given them hope as they barely receive good maize harvests due to poor rains in their counties. They appealed to the Kilifi County government to support them saying cotton farmers have been neglected in the region.

Original Link: https://www.kenyanews.go.ke/investing-in-technology-key-in-quality-cotton-production/

KOICA Provides $8m for Uplift Projects in Pakistan: Embassy

Global Korea Scholarship (GKS), she said, provides international students with opportunities to conduct advanced studies in undergraduate and graduate programs at higher educational institutions in the Republic of Korea in order to promote international exchanges in education and mutual friendship between countries.

He also chaired the Joint Symposium for Agricultural Technical Cooperation between both the countries, she added She further said that the technical Cooperation projects included self-sufficiency of virus free potato seed multiplication by aeroponic technique, chilli production and post-harvest management technology development in Pakistan, and establishment of production technology of major fodder crops in Pakistan.

Korea International Cooperation Agency (KOICA) has granted around $8 million to the government of Pakistan for executing various development projects with the collaboration of the Korean government.

She said that the Korea Programme on International Agriculture (KOPIA) Pakistan Centre was inaugurated by the administrator of the Rural Development Administration (RDA) of the Republic of Korea, Taewoong Hur during his visit with the delegation in August 2021.

Original Link: https://dailytimes.com.pk/915114/koica-provides-8m-for-uplift-projects-in-pakistan-embassy/

Pakistan Keen to Learn from Chinese Experience for Modernizing Agriculture Sector

BEIJING, April 16 (APP): Pakistan is keen to learn from the Chinese experience and expertise for modernizing its agriculture sector with focus on corporate farming, new seed development for enhancing crop yield, introduction of new varieties of agriculture products, establishing agro industry and setting cold chain network.

Pakistan was keen to learn from Chinese experience and expertise for modernizing agriculture sector in the country, with focus on corporate farming, new seed development for enhancing crop yield, introduction of new varieties of agriculture products, establishing agro industry and setting cold chain network.

Original Link: https://www.app.com.pk/global/pakistan-keen-to-learn-from-chinese-experience-for-modernizing-agriculture-sector/

Research Team Finds A Single Gene Can Affect Entire Ecosystem

A research team from the University of Zurich (UZC) has shown that a single gene can affect an entire ecosystem and the discovery of the "key gene" could change the current strategies of biological diversity conservation.

The UZH researchers and their colleagues from the University of California report that a mutation in a single gene dramatically changes the structure and function of an ecosystem. Thus, a gene does not only contain information critical to the fitness of an organism but can also affect the persistence of interacting species in an ecological community. The discovery of UZH Professor Jordi Bascompte and his team was based on an experimental ecosystem in the laboratory with a predator (parasitic wasp), two herbivores (aphids), and the plant Arabidopsis thaliana, a genetic model organism.

The scientists tested the action of three genes controlling the plant's arsenal of chemical defenses against feeding insects. They found that the herbivores and predators in their experimental community were more likely to survive on plants with a mutation in a single gene called AOP2. The scientists found that the natural mutation in the AOP2 gene not only affected the chemistry of the plant but also made it grow faster, which encouraged the coexistence of herbivores and predators and thus prevented the collapse of the ecosystem. AOP2 acts as a "key gene" essential for the survival of the experimental ecosystem.

For more details, read the article in UZH News.

RESEARCH HIGHLIGHTS

Transgenic Maize Does Not Cause Harm to Non-Target Organisms

A team of scientists from China and Switzerland studied the effects of pollen from genetically engineered (GE) maize on the ladybird beetle using omics approaches with feeding assays. Results found that the pollen may not lead to biologically relevant effects on the insect and the method is a useful strategy to assess biological impacts of GE on non-target organisms (NTOs).

The scientists used a total of 10 maize lines consisting of three GE lines and seven hybrid lines. Maize seeds were sown in a field station located in Gongzhuling City in China and were grown in the same environmental conditions. Pollen was collected during maize anthesis from each line and was subjected to combined omics and feeding assays to determine the effects on the ladybird beetle Propylea japonica.

The findings showed that genetic engineering caused the same differences in the proteome and metabolome levels of the maize pollen as with those observed in conventionally crossbred plants. These differences did not lead to unintended effects on NTOs that exceeded those observed on conventional crossbred lines. They concluded that the differences detected by omics experiments may not cause any biological relevant effects on NTOs, and that the methods they used are a valid approach to evaluate the biological relevance of compositional effects of genetic breeding.

For more details, read the full study published by *Plants People Planet*.

Bacteria that Kills Fungus Affecting Sugarcane Yields Discovered

A study conducted by scientists at the Brazilian Center for Research in Energy and Materials (CNPEM) has discovered that three strains of Pseudomonas bacteria can inhibit growth, and even cause the death, of the fungus responsible for pineapple sett rot, a disease that attacks sugarcane.

The three strains of Pseudomonas were found to inhibit in vitro up to 80% of the mycelial growth of Thielaviopsis ethacetica, the agent of pineapple sett rot, which is a fungus found in the soil and penetrates sugarcane stalks through cuts or wounds. The disease reduces budding and hence yields by as much as 50%.

Pineapple sett rot affects several tropical crops but has a significant impact on sugarcane yields in Brazil. The fungus prevents cuttings from germinating or developing completely. As the fungus reproduces inside the plant, the stem fibers redden, gradually darkening and becoming covered with spores. The fermentation triggered by the pathogen releases a pineapple-like odor. The disease has become more prevalent in recent years and is now most frequent in canefields.

The research team screened bacteria from different kinds of soil and roots in CNPEM's Brazilian Biorenewables National Laboratory (LNBR)'s microorganism collection. They selected 70 bacteria belonging to several genera and from different parts of Brazil. The three strains of Pseudomonas identified as most effective were confirmed by genetic sequencing. The team is now working to discover the species to which the strains belong.

For more details, download the paper published in *Environmental Microbiology*.

PLANT BREEDING INNOVATIONS

Novel Plant Breeding Techniques Boosts Cereal Production

Experts from China and Germany published a review about the impact of novel plant breeding techniques on boosting cereal crops' production. The open-access article is released in Plants journal.

Cereals are the major source of human food globally. With the continuously increasing demand for food, changing climate conditions, and prevalence of diseases, cereal production has been a challenge. Thus, researchers have been finding ways to improve production using conventional techniques. However, such approaches require long periods of time and additional inputs to develop improved varieties. With the recent developments in genome editing, there is also an increase in the possibility of precise and faster crop improvement. These techniques include CRISPR-Cas9, CRISPR-Cpf1, prime editing, base editing, dCas9 epigenetic modification, and several other transgene-free genome editing approaches.

According to the review article, these technologies have led to revolutionary developments and researchers have quickly attained remarkable achievements. However, these tools are often linked with various bottlenecks that prevent the scaling development of new varieties that can be dealt with by integrating the genome editing tools with the improved conventional breeding methods such as speed breeding, which would take plant breeding to the next level. The review also summarizes the traditional, molecular, and integrated approaches to speed up the breeding procedure of cereals.

Read the article in *Plants*.