



# 2020

ACCOMPLISHMENT REPORT





## ISAAA Pledge

ISAAA is a not-for-profit international organization that supports access to biosciences to all stakeholders, especially in the developing countries to ensure socioeconomic and environmental benefits. Millions of farmers and their families have benefitted in the last three decades through our knowledge sharing, capacity building initiatives, and support services. Millions of global population have had access to quality and safe food due to the adoption biosciences in agriculture. This creates a healthy planet and population.

ISAAA works towards a world where science is accepted and accessible to be used as a tool for sustainable development. We do this by building trust and transparency in science, with the aim of fulfilling the three pillars of sustainability: economic viability, environmental protection, and social equity. These are achieved through science-based decisions spurred by effective science communication. ISAAA believes in the inclusion of all stakeholders, with a strong focus on farmers, youth, and women with an ultimate goal of approval, adoption, and acceptance of scientific innovations.

## Message from the Board Chair

This past year has been another amazing year of accomplishments and impact by the ISAAA team, despite some strong challenges in the operating environment!

The year 2020 evidenced important developments in the crop biotechnology world, especially in the developing countries of Africa, Asia, and Latin America, which will be detailed in this report.

Noteworthy are the new countries in Africa with commercial plantings and several more in advanced stages of the regulatory, pre-commercialization process. Also noteworthy is the increase in area of the range of crops beyond the "Big Four" of soybean, maize, cotton, and canola, especially in the developing world. Indeed, three developing countries (Vietnam, Philippines, Colombia) had double digit increases in biotech crop area.

Concomitant with these positive developments is also the progress made in the regulations space in several countries, much of which would not have been possible without the knowledge sharing of ISAAA and the close working relationships that have built over the years of working with partners based on mutual respect. ISAAA is viewed broadly as a trusted broker of scientific knowledge that benefits developing countries, not beholden to any one country or group.

As we end the second decade of the 21st millennium, we can take pride that more farmers are benefitting from more traits in a bigger variety of crops, and that moving into the third decade, we can expect to see even more applications of biotechnology expressed through new breeds.

Going into the new decade too, ISAAA will be evolving into a more substantive partnership mode of operation with like-minded organizations.

The task ahead remains huge if we are to make a dent on the relevant SDGs. We hope to harness the many partnerships that have built up over the past decades to become even more relevant and impactful in the coming one. And to do so we will require the support of all who read this report. Please join us.

Prof. Dr. Paul Teng  
**Board Chair**



## Message from the Global Coordinator

Unprecedented times calls for unprecedented approaches and that is what ISAAA did. In spite of the multiple challenges brought by the global lockdown, ISAAA marched ahead. ISAAA is fortunate on many fronts. Being a pioneer in the field of knowledge transfer and capacity building in agri-biotechnology; staffed by extremely knowledgeable and experienced long-serving personnel; wide network across stakeholders; and valuable partners enabled us to pull through during the crisis. The pandemic made us busier than ever. We reformed and continued our outreach programmes virtually.

Our webinar series on gene editing and animal biotechnology gathered over 60,000 participants from over 97 countries. We covered all areas from crops to industrial, medical, livestock and fisheries, and addressed science, regulations, communication, and economy.

This brought the memory back when ISAAA was established to facilitate the adoption of biotech crops in the late 1990s. The hurdles might be aplenty but ISAAA persevered until biotech crops became the fastest adopted crop technology. It is rewarding to see today, Africa is adding new biotech crops into the global food basket. Our strong base in Kenya, with the efforts of many others in that region, have transformed Africa from a follower to a leader. Last year marked an historic event with cowpea being added to the global biotech crop basket. We are now determined to do the same for new breeding technologies and animal biotechnology to ensure food security, sustainable development, and women and youth empowerment.

ISAAA's Global Status of Commercialized Biotech/GM Crops: 2019 (ISAAA Brief 55) was launched for the first time in the Arab world, Australia, Europe, and in Latin America after many years. Africa Life Science Knowledge Hub was established in collaboration with UNESCO to effectively engage with all stakeholders beyond farmers and crop biotechnology by ISAAA AfriCenter.

We are positive that 2021 will be more successful and I am inviting like-minded organizations to be part of this success.

Dr. Mahaletchumy Arujanan  
**Global Coordinator**



## Message from the the *SEAsiaCenter* Director

The year 2020 brought enormous challenges to the world population – negative effects of climate change including yield reduction in staple crops, emergence of new pests and diseases in crops and animals and reduction in agriculture resources were exacerbated by the coming of the worst pandemic of the modern times. Efforts to address the needs of the growing population have become more challenging with COVID-19 pandemic, but products of modern biotechnology have once again provided immediate solutions in the form of vaccines and therapeutic medicines, new crop varieties with improved traits to solve food production problems in the farm and enhanced nutritional components.

With these events, ISAAA becomes more energized and motivated to help contribute in alleviating these problems through knowledge sharing and capacity building activities. The *SEAsiaCenter* has been a strong force in motivating interest groups to appreciate the power of science in solving these problems. Information resources on COVID-19, genome editing (new breeding innovations), Bt eggplant, as well as new publications, videos, infographics, and other materials are featured at the ISAAA website. These are on top of our long-time popular products such as the *Global Status of Commercialized Biotech/GM Crops*, the GM Approval Database, and the e-newsletter *Crop Biotech Update*.

The Center also harnessed the power of social media in disseminating biotech information through ISAAA.org and Science and She accounts on Facebook, Twitter, and Instagram. We have built steady and strong following which amplify every activity and information that ISAAA delivers.

Developments in online communications allowed ISAAA to network, hold meetings, seminars, and workshops reaching regional and international scales. ISAAA's vast network facilitated these collaborations with the Philippine Department of Agriculture Biotech Program Office, US Department



of Agriculture, US Embassy in Manila, CropLife Asia, 2Blades Foundation, and the Biotechnology Information Centers in Asia. Specifically, ISAAA *SEAsiaCenter* played an essential role in capacity building for regulation and science communication in the Philippines and Myanmar, global efforts on awareness building and regulation for animal biotechnology, high level policy dialogue on biotechnology in the Asia Pacific Economic Cooperation, biotechnology and biosafety in Australia and New Zealand, and many more.

ISAAA continues to evolve in response to challenges and information needs. We invite you to be with us during this transformation as a partner, collaborator, and co-influencer.

Dr. Rhodora Romero-Aldemita  
**SEAsiaCenter Director**

## Message from the the *AfriCenter* Director

There is an African proverb that says “however long the night, the dawn will break.” This adage manifested itself within Africa’s biotechnology and biosafety landscape in 2020. After years of several challenges and set-backs, the continent led progress among regions of the world in GM crop adoption. Africa doubled the number of countries planting biotech crops from three in 2018 to six in 2019. Indeed, the tides are changing, and the region is at its tipping point.

These changes can be attributed to our dedication, resilience, and resolve to keep forging ahead despite the hurdles. We believe that a successful journey begins with the end in mind. For us, that end represents changing the fortunes of African farmers by delivering the benefits of biotechnology tools. We refuse to lose. Even when the journey seems insurmountable, we stay in it to win it, not because it is easy, but because it is necessary.

The fighting spirit we have built over the years came in handy in the face of COVID-19. As the world grappled with how to settle into this “new normal”, we quickly shifted gears and adjusted our mode of operation to virtual engagements. Because of this, we were able to hold more than 20 webinars, reaching close to 3,000 individuals, from over 100 countries in a span of 6 months. The webinars that focused on genome editing, animal biotechnology, as well as the global status of biotech crops, undoubtedly provided a valuable knowledge base that will encourage constructive dialogue. We continued to strategically share knowledge on crop biotechnology as outlined on page 18, and intensified engagements with policy and decision makers in an effort to build a favorable policy environment for gene technologies, as detailed out on page 20. *AfriCenter* also continued to build the capacity of those who contribute towards shaping public opinion on biotech and biosafety, and engaged various key influencers that play a fundamental role in ensuring society benefits from science. Despite the extraordinary working conditions, we were also able to forge new partnerships for a better Africa.

Undoubtedly, 2020 was a difficult year for everyone. It



required us to tap into our strengths, purpose, and vision more than before, to activate our promise to African smallholder farmers. We are not fully there yet, and we will not relent. Our desire for this continent remains consistent: to deliver appropriate agricultural technologies into farmers’ hands. To those that stood by us during these trying times, and those who continue to walk with us despite the uncertainties, we thank you. Above all, special appreciation to the Kenyan President for conferring me a state honor – the Moran of the Order of the Burning Spear, a big boost towards pursuing our dream of making science count for Africa.

Dr. Margaret Karembu, MBS  
**AfriCenter Director**

# Year in Review

## Global report on biotech crops



**85.9** million media impressions  
Over **45** countries reached  
**600** copies purchased

## Newsletters

### Crop Biotech Update

**~24k** subscribers  
**1M** pageviews



Drumbeat  
**3,800** subscribers

## Website

**517,682** users  
41.5% increase  
**1,719,860** pageviews  
17.2% increase



New resource pages on COVID-19, Genome Editing, and Bt Eggplant

## Webinars



**81,590** participants

mostly researchers, academics, students, and media practitioners

**Topics:** genome editing, animal biotech, GM crop adoption and socio-economic impacts, science communication

## Social media reach

**163.3k** total followers of the ISAAA network

## Science Speaks blog

**~10k** pageviews since launch in April

New posts every week



## Information Materials

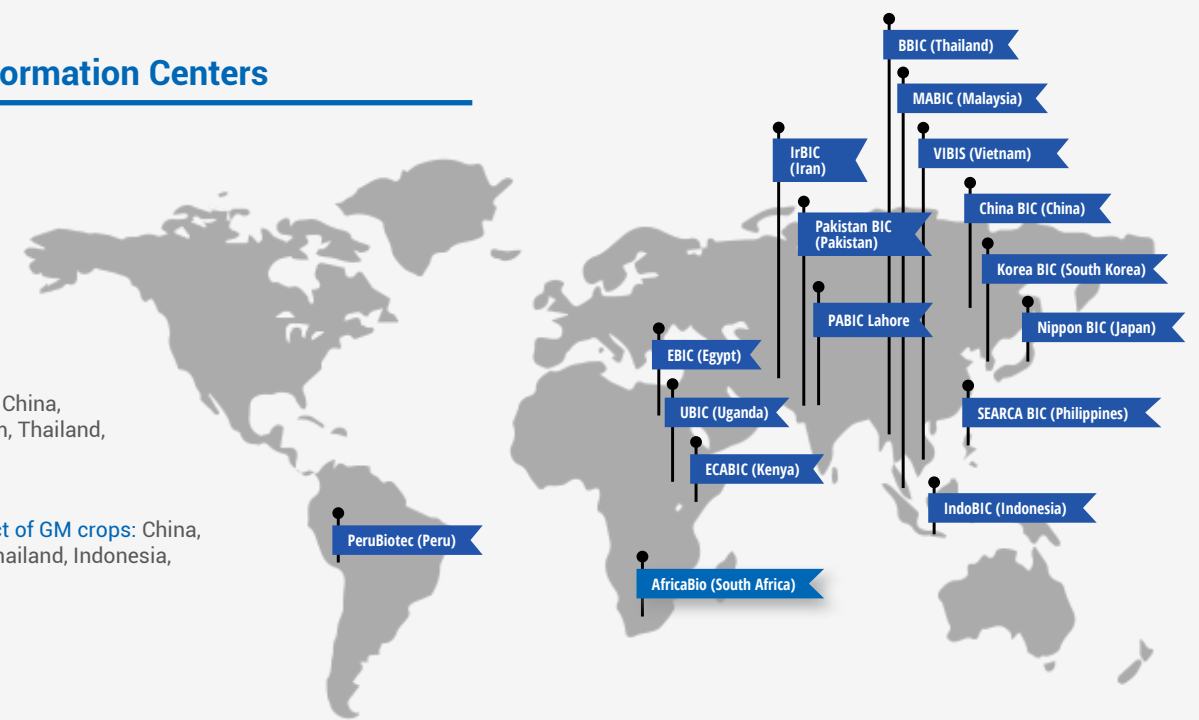
**10** new publications  
**8,656** total downloads

**24** new videos  
**13,613** total views

## Biotech Information Centers

CBU Translations: China, Indonesia, Vietnam, Thailand, Japan, Korea

Webinar on impact of GM crops: China, India, Pakistan, Thailand, Indonesia, Vietnam



## Asian Short Course on Agri-biotechnology, Biosafety Regulation, and Communication

**19** international experts  
**25** participants from **8** countries  
**5** sessions in biotech, gene editing, and science communication



## Media engagement

**~200** meetings with **~200** journalists to foster accurate biotech reporting in Africa  
**14.8B** total media impressions  
**22** media practitioners from radio, TV, print, and online news agencies joined the OFAB-Kenya Media Awards

## Networking



## Biotech policy development

- Support to the completion of Myanmar's National Biosafety Guidelines
- Training workshops on animal biotech for Philippine regulators
- Support for Bt eggplant direct use application in the Philippines
- Support for VIRCA Plus environmental release application in Kenya

Establishment of the **BIOTRUST CONSORTIUM**

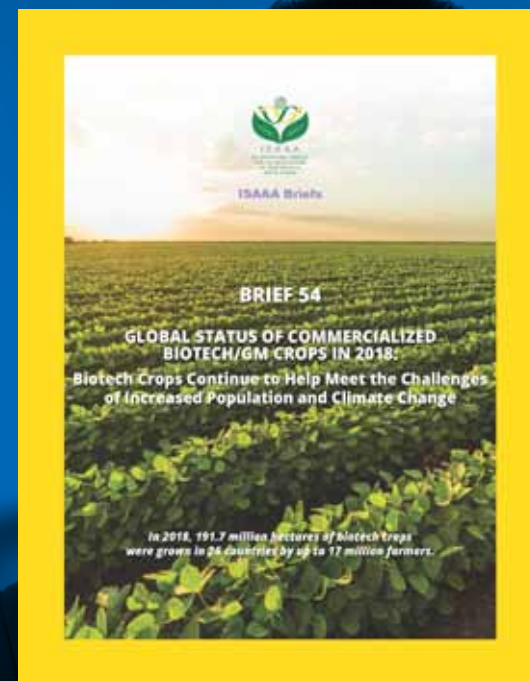
# Strategies

## We feed the world with knowledge

ISAAA advances knowledge sharing on biosciences through its Global Knowledge Center on Crop Biotechnology (KC). KC spearheads the development of the Annual Briefs on the Global Status of Commercialized Biotech/GM Crops, which is the top source of information on biotech crop adoption worldwide. Publications, videos, blogs, and social media campaigns on biotechnology and related fields have been created, helping stakeholders from the developing world to make decisions based on science-based information. A series of webinars on genome editing, animal biotechnology, GM crop adoption and socio-economic impacts, and science communication were also offered to feed the growing interest of stakeholders on these topics.

## Monitoring global biotech crop adoption

The 2019 survey of ISAAA Brief readers revealed that ISAAA is regarded as the top authoritative source of information about biotech crop adoption globally. The users, mostly academics, scientists, and executives, expressed the usefulness of the ISAAA Brief in their specific endeavors. Over 50 percent of the ISAAA Briefs readers gave the highest ratings in terms of clarity of writing, content, topic coverage, design, accuracy, usefulness, and timeliness of the ISAAA reports.



ISAAA Brief 54, which features the global GM crop adoption in 2018, reached a total of **85,883,698** media impressions and **14,569** social media mentions.

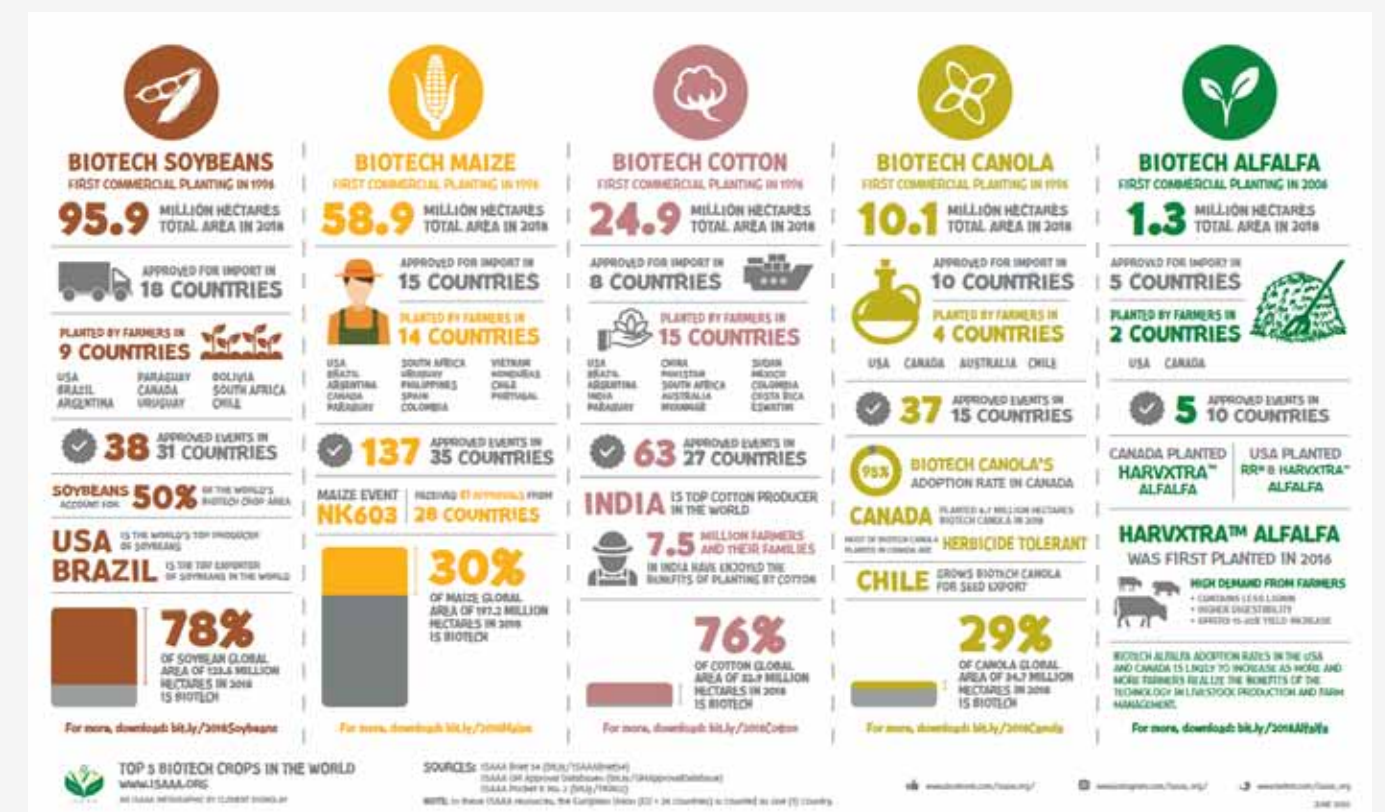
In 2020, ISAAA released Brief 55, Global Status of Commercialized Biotech/GM Crops: 2019. The report was launched virtually through webinars hosted in Africa, Asia, Latin America, and Europe with total participants of 6,884. Biotech scientists, economics and regulations experts, as well as biotech farmers were invited to share their knowledge and experiences in biotech crop adoption. Since its launch in November 2020, the report has been mentioned 289 times online on news, research articles, and social media discussions, mostly in neutral tone, and reached 2,555,268 media impressions. These figures indicate that ISAAA remains to be the top authority in providing information on global GM crop adoption.

## Getting ahead in genome editing and other biosciences

New publications and videos were developed and released to highlight ISAAA's accomplishments, the use of plant technologies in fighting COVID-19, and biotech crop adoption. *ISAAA in 2019: Accomplishment Report* highlights the team's efforts to bring the benefits of biotechnology to those who need it most and uplift more lives, especially in the developing world. To keep up with the times, a Pocket K on COVID-19 was released. *Pocket K 58: COVID-19 Treatment Efforts Using Plant Technologies* presents plant research being conducted on COVID-19 and SARS-CoV-2. A new infographics, *Top 5 Biotech Crops in the World* features the top biotech crops soybeans, maize, cotton, canola, and alfalfa and includes important details about the planted area, planting and importing countries, and the number of events approved for each crop, based on data from Brief 54.

We are ISAAA video highlights ISAAA's efforts in sharing the benefits of biotechnology to the world. The video *Inside the Biotech Lab* seeks to dispel doubts and fears about crop biotechnology by showing step-by-step footage of what actually happens when using a gene gun inside a laboratory.

Aside from new publications and videos, ISAAA also updated key publications with data and information from Brief 54. These include the *Top 5 Biotech Country Facts and Trends*, including the USA, Brazil, Argentina, Canada, and India; 12 *Pocket Ks*, and three infographics, namely, *Where are biotech crops grown in the world?*, *23 years of biotech crops in the world*, and *Do you know where biotech crops are grown in the world?*. A number of ISAAA publications were also translated to Filipino and local dialects in the Philippines, including Cebuano and Ilocano.



## Massive online information sharing

ISAAA hosted a series of webinars on genome editing, animal biotechnology, GM crop adoption, impact of biotech crops, and science communication. These webinars reached a total of 81,590 attendees on various platforms and equipped a wide variety of audiences including scientists, academics, students, and media practitioners.

**Genome Editing.** Genome editing is one of the new breeding techniques that allows scientists to improve the characteristics of living organisms, including plants, animals, and bacteria. ISAAA monitors the advances in genome editing and their implications in food and agriculture. Thus, ISAAA hosted a series of public webinars tackling its healthcare, agricultural, and industrial applications. The regulations surrounding the technology was also tackled with experts from various countries, as well as its implications for bioentrepreneurship and innovation. A total of 15,107 participants attended the public genome editing webinar series.

**Animal Biotechnology Regulations.** ISAAA, the Inter-American Institute for Cooperation on Agriculture, United States Department of Agriculture, Virginia Polytechnic Institute and State University co-organized a webinar series on Regulatory Approaches for Agricultural and Food Applications of Animal Biotechnology. International experts on

animal biotechnology were invited to tackle a wide range of topics such as food safety assessments, genome editing regulatory approaches, and environmental safety aspects of regulations for genetically engineered animals for confined use and environmental release. Breakout sessions were also held to synthesize all the key points raised during the sessions. Each session was attended by over 100 invited participants, with the highest attendance of 174 in one of the sessions. The online workshop is a prelude to an in-person event scheduled in 2021.

**Impact of GM Crops.** In partnership with CropLife Asia and Biotech Information Centers (BICs) in selected Asian countries, ISAAA conducted a series of webinars on the global impact of GM crops. The webinars, which served as a virtual information roadshow that featured the latest report of PG Economics titled *GM Crops: Global Socio-economic and Environmental Impacts 1996-2018* authored by Graham Brookes and Peter Barfoot. For each webinar, Graham Brookes shared the agricultural environmental impact, return on investment for the GM crop farmers, and contribution to global food security of GM crops. Scientists and farmers provided local biotech crop adoption perspectives as well. The webinars, which were offered for free to all registrants, reached a total of 50,391 attendees, mostly from the scientific community.

Webinar topic	Participants*
Genome editing	15,107
Animal biotech	5,515
Science communication	993
Socio-economic impacts of GM crops	50,391
Global adoption of GM crops	6,884
Other topics	2,700
<b>Total participants</b>	<b>81,590</b>

\*Estimated number of participants on various platforms (Zoom, Facebook, Youtube, and other third-party streaming services)



## Regular updates on crop biotechnology

The *Crop Biotech Update* is the longstanding newsletter worldwide dedicated to reporting the latest updates on crop biotechnology approvals, research and development, and regulations. The weekly e-newsletter reaches 23,795 subscribers worldwide, keeping biotech stakeholders updated on the technology, to guide them in their decisions pertaining to biotechnology. News from the CBU have been lifted and republished in other newsletters on agriculture and science. In 2020, over 10,911 links from other websites were linked to the CBU news articles. A section on COVID-19 updates was added to cover the latest progress on plant-based technologies dedicated to addressing the pandemic. The most-shared articles were about genome editing, indicating a high interest of the subscribers on the topic.

### Crop Biotech Update



**23,795** subscribers

**10,911** links from other sites

**60,709** pageviews per month

## Serving as science's mouthpiece

In April 2020, amidst the lockdown imposed by the COVID-19 pandemic, the brand new ISAAA blog, *Science Speaks*, was launched. The blog extends ISAAA's goal of providing effective platforms of communicating science to major stakeholders from different parts of the world. Blog features include new ISAAA publications, key activities, events, and developments, as well as updates from its global network of Biotechnology Information Centers and other partners.

Since April 2020, 40 blog articles have been published in *Science Speaks*. These articles covered topics on COVID-19, the Bt eggplant project in the Philippines, adoption and benefits of biotech crops, animal biotechnology, gene editing, and the launch of ISAAA Brief 55 Global Status of Commercialized Biotech/GM Crops: 2019. *Science Speaks* articles have been republished in the Genetic Literacy Project, SeedQuest, and Agro-Bio, a Spanish news service for Latin American countries.



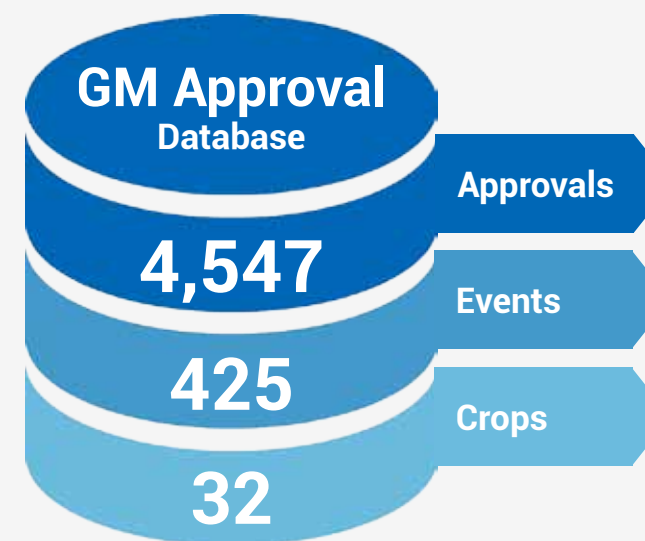
**9,337** pageviews since its launch on April 22, 2020

**361** Facebook followers **172** Twitter followers

## Valuable resources on GM crop approvals, genome editing, COVID-19 and Bt eggplant

ISAAA launched three new resource pages that aim to provide the public an up-to-date information on the latest news, publications, and breakthroughs on COVID-19 pandemic, genome editing, and Bt eggplant. These knowledge resources can be accessed by the public for free. It contains a wide array of information such as scholarly articles, peer-reviewed publications, articles published in *Crop Biotech Update*, blog posts, infographics, and videos. The pages are updated every week to keep the readers informed on the latest happenings and breakthroughs in food and agriculture.

ISAAA, for the past 10 years, has been following the global GM crop approvals and holds an easy-to-use database of biotech/GM crop approvals for public use. It features the biotech/GM crop events that have been approved for commercialization/planting and importation (food and feed). Entries in the database represent the majority of the GM crop events approved worldwide, based on publicly available English (and translatable) decision documents of each approving country, Biosafety Clearing House of the Convention on Biological Diversity, and peer-reviewed scholarly articles.





# Strengthening capacities in Asia

The COVID-19 pandemic did not hinder ISAAA from reaching out to its global stakeholders to help them improve and broaden their knowledge about genetic engineering, biosafety regulations, and science communication. These three fields were the focus of ISAAA SEAsiaCenter's capacity-building activities in 2020.

## Asian Short Course on Agri-biotechnology, Biosafety Regulation and Communication (ASCA)

Launched in 2018, ASCA aims for its participants to develop a better understanding of the entire value chain of living modified organisms and the international biosafety regulations that govern them. To complement this, ASCA also teaches the participants how to effectively communicate agri-biotechnology and biosafety regulation in different media platforms, particularly through social media. Similar with the past two years, the 3rd ASCA covered the concept and practical uses of agri-biotechnology as well as a well-rounded discussion on the international laws that it needs to abide by. However, ASCA2020 was set apart with the inclusion of the topic of Digital Sequencing Information as a response to the Nagoya Access and Benefit Sharing Protocol. ASCA2020 also accommodated participants from 12 countries in 4 continents to learn from a pool of 19 international experts.

Through an online evaluation, most of the participants expressed their appreciation on the range of topics in the course, and that the online platform was able to provide an avenue for in depth discussion for a diverse group of speakers and audience. More than half of the participants stated that they will strongly recommend the course to their colleagues. With that, ISAAA plans to continue on conducting and improving ASCA to cater to a wider audience and cover more relevant topics in the years to come as both biotechnology and new breeding innovations continue to evolve.

## Science communication workshop for scientists and academics in Myanmar

ISAAA continues its partnership with Myanmar's Plant Biotech Center (PBC) of the Ministry of Agriculture, Livestock and Irrigation in highlighting the country's acceptance and adoption of biotechnology through the development of its National Biosafety Framework and biosafety regulation assessment guidelines. ISAAA designed and conducted an online science communication workshop for the designated researchers and technical personnel of PBC. With the help of international experts, the workshop provided the participants with additional skills to maintain the flow of information sharing in the newly created Biotech Portal, which aims to be a credible centralized source of biotech and scientific information for the country.

## Webinar series on animal biotech for Philippine stakeholders

Every year since 2017, the US Department of Agriculture Foreign Agricultural Service (USDA FAS) through the US Embassy Manila partners with ISAAA to conduct an annual program to engage judiciary and legislative officials, academic institutions, agricultural entrepreneurs, industry executives, and media practitioners in an exchange of information about the trends on biotechnology. The 2020 program was a week-long virtual biotech outreach on animal biotechnology with the objective of improving the understanding and acceptance of the technology in the Philippines. Polls were used to gauge the audience's awareness and understanding about the topic. While results about the acceptance of animal biotech differed according to each audience group, most of the participants expressed that their level of knowledge on the science, adoption, and regulation of animal biotech improved after the webinars.

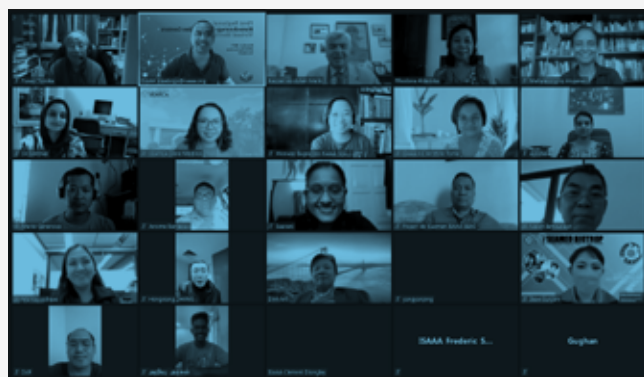
## Training-workshop on genetically engineered animals for Philippine regulators

In collaboration with the Philippine Department of Agriculture, ISAAA conducted an online training-workshop for Filipino regulators to advance the drafting of biosafety framework for genetically engineered (GE) animals. Senior and junior regulatory representatives of four government departments learned from a pool of international experts from countries that have successfully implemented their respective animal biotechnology assessment guidelines. With an existing draft to work with, the participants and resource persons further reviewed its contents to make sure that all aspects of animal biotech regulations are covered, to assess each agency's capacity and facilities to conduct biosafety assessments on GE animals. The activity concluded with a list of identified strengths, gaps, and proposed measures from the regulators that will be taken into consideration when finalizing the biosafety regulations prior to implementation.

## Public engagement on Bt eggplant's potential impact

ISAAA, in partnership with University of the Philippines Los Baños, initiated the Bt eggplant project in the Philippines. Bt eggplant produces Bt protein that makes it resistant to Eggplant Fruit and Shoot Borer (EFSB). The project aims to help the farmers produce a new variety of eggplant that is safe to farmers and consumers. Through continuous monitoring of the development of Bt eggplant in the Philippines, ISAAA will continue its mission on sharing knowledge through its publications, knowledge resource page, blogs and capacity building efforts about Bt eggplant.

## Networking for massive information sharing and public engagement in biosciences



**Malaysia.** The pandemic has opened many doors for Malaysian Biotechnology Information Centre (MABIC) to raise science literacy awareness among the public. MABIC founded the Science Media Centre (SMC) in April 2020 and conducted six webinars on food security, COVID-19, and vaccines. SMC is an information resource center targeted for journalists and aimed at promoting accurate and evidence-based reporting especially on complex or controversial science issues in the media.

MABIC's *The Petri Dish* and SMC initiated a public vaccines awareness campaign, Trust the Shot. This is supported by Duopharma Biotech Bhd, the largest pharmaceutical company in Malaysia. The campaign aims at raising acceptance among the public on all approved COVID-19 vaccines.

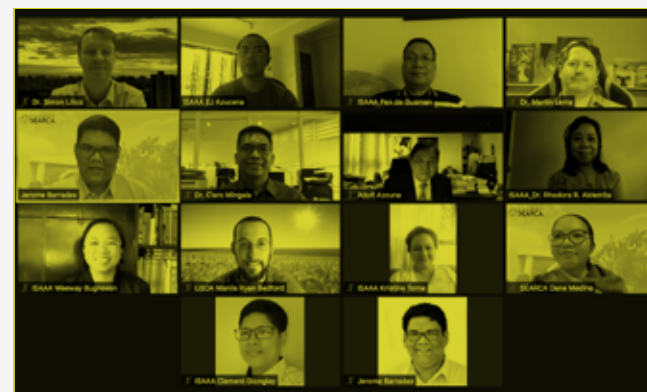
*The Petri Dish* and SMC were appointed as media partners for British Council Webinars related to Women in STEM and FameLab. Another project is Malaysian Technology Development Corporation's campaign on how digitalization and technopreneurship offer opportunities during the COVID-19 pandemic.

Dr. Mahaletchumy Arujanan, Executive Director of MABIC, has also emerged as a prominent science communication expert for the media to speak on creating awareness on COVID-19 and vaccines. The

Petri Dish has also gained huge support from the public, with the increasing number of subscribers.

**Philippines.** For over two decades, SEARCA through its Biotechnology Information Center, has actively reached out to various stakeholders from different sectors in the Philippines and the Southeast Asian region to deliver credible, science-based information on agricultural biotechnology.

SEARCA teamed up with the US Embassy Manila and ISAAA for the virtual webinar on the Global State of Animal Biotechnology and the Need for National Policy Support, in collaboration with the Philippine Judicial Academy, Philippine Association of Law Schools, and the Committee on Science and Technology of the Philippine House of Representatives. The webinar aimed to equip policymakers, lawyers, and judges with science-based evidence on animal biotech to guide them in crafting sound policies and decisions to achieve the desired change in the agricultural sector. Both webinars saw a great turnout, with over a hundred participants composed of legislators, legislative staff, judges, lawyers, and court personnel in attendance.



The SEARCA Online Learning and Virtual Engagement (SOLVE) webinar on the "Unrealized Potential of Animal Biotechnology" was attended by more than 900 participants from the Philippines, Cambodia, Thailand, the United States, and Vietnam. Experts and scientists from Argentina, United Kingdom, and the Philippines were brought in to share their expertise on global and local animal biotech applications as well as the regulations and challenges in the field.

The Center supported the 3rd Asian Short Course on Agri-biotech, Biosafety Regulation, and Communication, wherein eight young professionals

and current scholars from across Southeast Asia were sponsored.

**Pakistan (Karachi).** Pakistan Biotechnology Information Center in Karachi (PABIC Karachi) has become instrumental in pushing biotechnology in the country in the face of the COVID-19 pandemic. PABIC Director, Dr. Muhammad Iqbal Choudhary was appointed by the Prime Minister of Pakistan as the member of the National Task Force for Knowledge Economy and the National Task Force for COVID-19.

PABIC Karachi also tied up with Dalda Food to promote the use of modern technology to boost oil seed crop production in Pakistan.

**Pakistan (Lahore).** Pakistan Biotechnology Information Center Lahore Chapter and partners developed the booklet on the Current Status of Agricultural Biotechnology in Pakistan highlighting the regulatory structure for GM crops in the country as well as the emerging technologies necessary to advance agriculture. PABIC Lahore also co-organized the webinar on the Global Impact of GM Crops, informing various stakeholders with science-based information on the topic.

PABIC Lahore has become more active in informing the public about biotech through social media with a 180% increase in reach from the previous year. Continuous updates on biotech in Pakistan are also circulated through its e-newsletter.

**Thailand.** Biotechnology Alliance Association (BAA) joined the ISAAA network as the biotech hub for Thailand starting 2020. One of the regular activities of BAA is the translation of the Crop Biotech Update and other ISAAA publications to Thai. BAA also hosted the ISAAA Webinar on Global Impacts of GM Crops.

**Indonesia.** Indonesian Biotechnology Information Center (IndoBIC) organized a webinar series on the impact of agri-biotechnology on Indonesia's food security. A total of 915 participants attended the four-talk series, which tackled global status of biotech crops, biotech crop regulations in Indonesia, and the socio-economic impacts of biotech corn and potato. Another webinar on the impact of GM crops

in Indonesia was conducted with ISAAA and CropLife Asia, which informed over 400 participants.

In collaboration with USDA Foreign Agricultural Service, IndoBIC developed a fact sheet in Bahasa Indonesia which provides information on agricultural biotechnology.

Public perception of biotech crops in Indonesia was investigated through a study conducted by IndoBIC, USDA-FAS, CropLife Indonesia, and Michigan State University. Results showed that over 75 percent of respondents agreed or strongly agreed that biotechnology could improve economic conditions and quality of life, increase agricultural productivity, improve farmers' welfare and help maintain food security.

**China.** China Biotechnology Information Center (CABIC) co-organized the ISAAA webinar on the global impact of GM crops, together with the Chinese Society of Biotechnology and CropLife Asia. CABIC also translates the Crop Biotech Update to Chinese.

**Japan.** Nippon Biotechnology Information Center (NBIC) translates the Crop Biotech Update to Japanese and distributes it to a mailing list. The translated articles are uploaded on the Hokkaido Bio-industry Association and Japan Bioindustry Association websites. NBIC participated in the hybrid-meeting of Japanese Associations for promoting bio-industries through which a governmental policy for responsible ministries and agencies was developed focused on the strategy 'Realizing the world's most advanced bio-economy society by 2030'. Meetings with farmers were also held to inform them about the developments in GM and gene-edited crops.

# Advancing biotech adoption in Africa

AfriCenter's mission is to share knowledge on agricultural biotechnology and biosafety through strategic communications and outreach for informed policy and choice in Africa. To achieve this mission, the Center focuses on three principle areas namely; knowledge sharing, capacity strengthening, and policy outreach. AfriCenter also facilitates technology transfer and provides communications and research support in crop biotechnology and emerging gene technologies.

In 2020, the Center adjusted its mode of operation to virtual engagements and less physical meetings in compliance with COVID-19 pandemic protocols.

## Spearheading knowledge sharing on crop biotechnology in the region

Impressive milestones were recorded through the Center's knowledge sharing outreach activities. The continent doubled the number of countries planting biotech crops from three in 2018 to six in 2019, leading the progress among the regions of the world in GM crops' adoption. Ethiopia, Malawi, and Nigeria planted GM crops joining South Africa, Sudan, and Eswatini. The seventh country, Kenya, granted approval for cultivation of Bt cotton and getting ready to join the league of adopting nations on the continent. Nigeria approved commercial planting of pod borer-resistant (PBR) GM cowpea adding a new biotech crop to the global biotech basket.



Caption: Kenyan Cabinet ministers plant Bt cotton in open field

The report on *Global Status of Commercialized Biotech/GM Crops*, ISAAA's flagship publication, remains the leading source of credible information on biotech crop research, regulatory and adoption trends. The highlights of the latest report (ISAAA Brief 55) garnered a record 11 million media impressions in Africa.

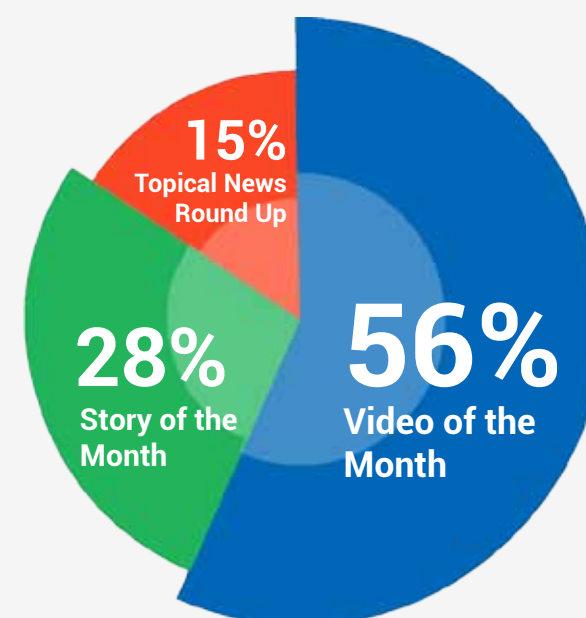
AfriCenter consistently published *The DrumBeat*, a monthly e-newsletter that informs and educates key stakeholders on Africa's progress in the field of biosciences. The newsletter has gained popularity in the region and across the globe, with over 4,000 subscribers including policy makers, media, development partners, scientists, and academics.

*"The DrumBeat has brought Africa's biotechnology progress from oblivion to the limelight and it has created confidence in the adoption of agricultural biotechnology in the continent."*

**Dr. Rufus Ebegba**  
Director-General  
National Biosafety Management Agency  
Nigeria



## Click rate for different sections of the DrumBeat



## Supporting favorable policy environment

AfriCenter-led policy engagements boosted Africa's progress in biotech crop research, regulation, and acceptance as evidenced in Mozambique, Niger, Ghana, Rwanda, and Zambia. Niger passed their Biosafety Law. Rwanda joined Kenya and Uganda in undertaking research on GM cassava by initiating a confined field trial for brown streak disease resistance in 2020. Additionally, the Center took part in the virtual public participation outreach to secure public support for an environmental release application on brown streak disease resistant GM cassava in Kenya. The virtual process, which was the first in Kenya, has inspired other countries and projects like the Golden Rice in Philippines. Knowledge products complemented the virtual engagements.



## Strengthening scientists capacity through science communication

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Three virtual science communication workshops were held in 2020. The Center initiated the first Africa short course on agro-biosciences. A network of young professionals was formed to articulate Africa's biotechnology and biosafety aspirations at regional and international levels. Further, the Kenya chapter of Coalition on Communicating about Genome Editing was initiated with members pledging to strengthen networking and inter-institutional collaboration on all aspects of precision breeding.



## Media engagement for accurate reporting on crop biotech

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In 2020, *AfriCenter* held five sensitization meetings with over 200 journalists and media editors. Key among these, a study tour with media editors and a science café with Kenya's Cabinet Secretary for Trade which were particularly impactful. The editors were appreciative of the challenges scientists face battling misconceptions from inappropriate images and photos about their work. Continuous media engagement has contributed to increased and more accurate reporting with over 80 million media impressions.

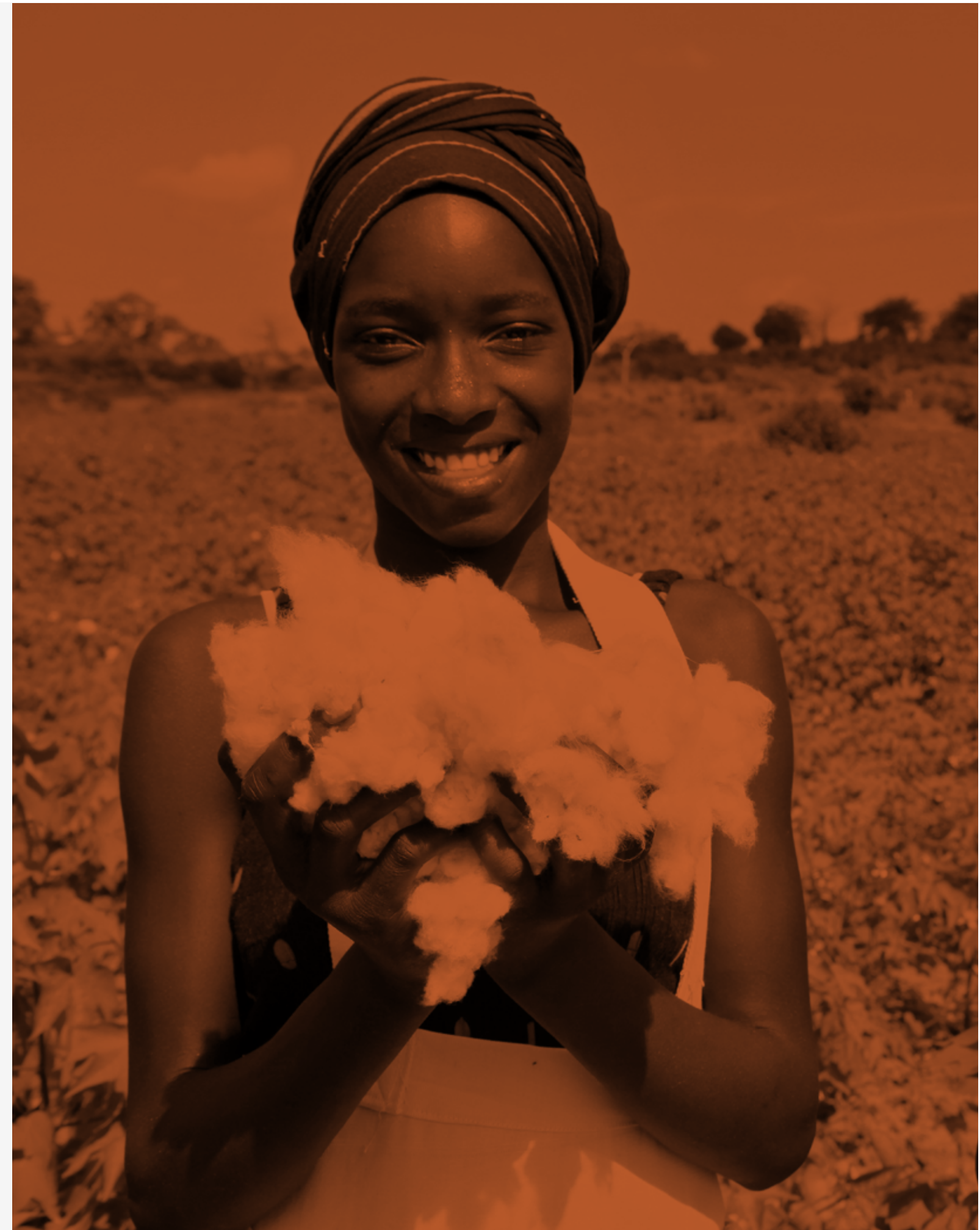


## Expanding the scope: *AfriCenter's* new initiatives

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*AfriCenter* co-hosted a virtual series on the fourth International Animal Biotechnology Regulatory Perspectives Conference. The conference raised optimism among Early Career and Young Professionals both in research and regulatory fields. The group expressed high interest in biosafety and are eager to face the intellectual challenge of helping solve real and perceived regulatory challenges through improved science communication and participation in international biosafety negotiations.

The Center also organized a series of virtual genome editing webinars. Starting conversations around precision breeding with the global community is important to encourage constructive dialogue and nurture a facilitative policy environment and spur bioentrepreneurship in Africa. The Center is taking the lead in strengthening biosciences communication and will for the 4th time be hosting the Africa Biennial Biosciences Communication symposium (ABBC2021) in August 2021. For more on this, visit [abbcysymposium.org](http://abbcysymposium.org).



# New Partnerships

**2Blades Foundation.** ISAAA is one of the pioneers in knowledge sharing on genome editing technology, having released hundreds of articles and short publications since 2016.

In 2020, ISAAA partnered with 2Blades Foundation, a charitable organization dedicated to the discovery, advancement, and delivery of durable disease resistance in crops. 2Blades establishes and manages development programs addressing significant unsolved crop disease problems in collaboration with leading research institutions around the world and at the 2Blades Group in The Sainsbury Laboratory, Norwich, UK. 2Blades Foundation holds exclusive global rights for uses of the TAL Code and TALENs in plants.

With the common goal of advancing public knowledge on genome editing, ISAAA and 2Blades co-developed Pocket K No. 59: Plant Breeding Innovation: TALENs. Pocket Ks are downloadable at the ISAAA website for free, optimized for ease of use and mobile reading.

ISAAA monitors the research and development of plants using TALENs and regularly releases articles on the *Crop Biotech Update*. In 2020, 12 articles on the topic have been published in the CBU and Science Speaks blog. With the help of ISAAA in communicating about TALENs, about 384,000 individuals have been equipped with information about the technology.

**What are TALENs?**  
**Transcription Activator-Like Effector Nucleases**

TALENs are used by scientists to help improve food crops

TALEs (Transcription Activator-Like Effectors) are natural proteins made and used by harmful plant bacteria to control plant genes during infection

Scientists have used the discovery of TALEs to:

- modify TALEs into TALENs
- design TALENs to target selected, specific DNA sequences
- make a cut in the targeted DNA sequence
- initiate the cell's own repair mechanisms to remove or introduce new DNA at the target site

**Africa.** *AfriCenter* expanded its rich pool of partners in 2020. The United Nations Educational, Scientific and Cultural Organization (UNESCO) and Imperial College London are our new partners. With UNESCO, a knowledge and information needs assessment on COVID-19 in Africa was conducted. The study will inform the nature of COVID-19 interventions and steer targeted capacity building efforts to improve media reporting on the pandemic especially among vulnerable communities. With Imperial College London, and a multidisciplinary team of partners, the Center kick-started the first-ever government-funded research project on synthetic biology in Kenya. The project will employ synthetic biology innovations in addressing intractable challenges in food security and healthcare by developing low-cost diagnostic kits and biosensors for improving disease surveillance and early diagnosis.

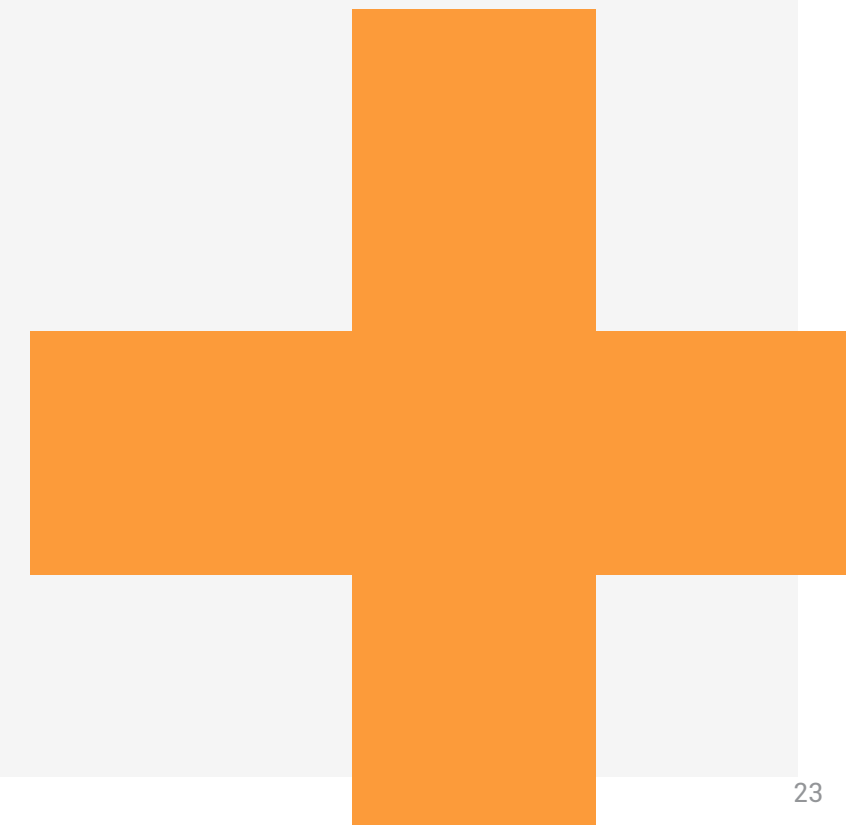


**Arab World.** In line with the ISAAA mission to support the adoption of agribiotechnology and biosciences in the developing world, a new milestone was created in 2020 with a tripartite memorandum of understanding between ISAAA, Association of Agriculture Research Institutes in the Near East and North Africa (AARINENA) and Association of Arab Universities (AARU). ISAAA will support capacity building initiatives in this region with a focus on ensuring food security; address underrepresentation of women in science, technology, engineering and math/biosciences; increase commercialization of home-grown technologies and regional and international cooperation; sustainable development in line with Sustainable Development Goals; and mobilize youth involvement in biosciences. Joint initiatives will kickstart in 2021.



ISAAA centers in Southeast Asia and Africa in creating a strong impact in the adoption of agri-biotechnology, we are now strongly motivated to support Latin American countries. ISAAA proudly welcomes our associate, Dr. Martin Lema, a highly respected scientist and regulator to reposition agribiotechnology in Latin America. Argentina as a leader in agri-biotechnology, will serve as a perfect base for ISAAA. Sustainable development is a key issue in this region with its rich biodiversity. Effective engagement with all players in this region will shape the political will and public perception to enable development of pragmatic biosafety regulations to strike a balance between economy, environment, and social justice.

**Latin America.** Following the success of



# 2021 and Beyond: Stepping up to be the global leader in building trust and transparency in biosciences

After a glorious three decades of championing the adoption of agri-biotechnology, ISAAA is now ready to widen its scope to emerging biosciences that is shaping the world of future food and energy. Agriculture is transcending to all sectors to improve lives making almost everything renewable and sustainable, and biosciences are at the center of this. Future-proofing of current regulations, policies, and public perception is needed to embrace gene editing, synthetic biology, gene drive, novel protein, biomass utilization, microbial technologies, precision fermentation, livestock, poultry, and aquaculture. ISAAA aims to be the "go-to" center for resources and be the epicenter where actions are initiated in these areas. We believe this cannot be done alone. It is time to have concerted efforts and with years of strong representation in agri-biotechnology, ISAAA is establishing the BioTrust Consortium with renewed mission and vision to support biosciences in agriculture.

The Consortium's aim is to be the global leader in building trust and transparency in biosciences. BioTrust Consortium will focus on inclusive engagement strategies; facilitating social licensing; supporting social justice on access to technology; ensuring transparent knowledge sharing; and future-proofing society on novel foods and biosciences. While science is advancing at lightning speed, pseudoscience is being exemplified and is spreading like wildfire. We are now living in an era of post-trust, post-truth and post-expert with prevailing anti-science sentiments among the public. We need new approaches in engaging with the society to raise

science literacy and acceptance to the next level. With emerging biosciences, regulatory approvals alone are insufficient to get new products to the market. We need social licensing where approvals are given by the public. We need social justice where no one is left behind.

We envision a world where the biosciences contribute every day to prosperity, societal wellbeing, and sustainability. Our goal is to improve society's acceptance of novel food and new food systems through multi-stakeholder trust-building activities. We believe in women and youth empowerment and it will be our focus to support the creation of more opportunities for these groups in entrepreneurship, policy making, and decision making roles.

We aim to achieve this by building trust and transferring knowledge in a transparent manner which will be the core values for BioTrust Consortium.

We are calling stakeholders to join us as members of the consortium where strengths could be leveraged, resources pooled, and actions amplified to achieve common goals. Members are welcome to provide core funding, support specified activities, share knowledge and data, or any other form of collaboration and cooperation.

We are excited about the next phase of ISAAA as we rebrand ourselves as BioTrust Consortium. Speak to us to create a stronger voice for biosciences, sustainable development, social justice, women empowerment and to silence fake news and pseudoscience.



For more information on the consortium, send a message to [marujan@isaaa.org](mailto:marujan@isaaa.org)

## Partners and Donors

2Blades Foundation  
African Agricultural Technology Foundation (AATF)  
African Biosafety Network of Expertise (ABNE)  
African Seed Trade Association (AFSTA)  
Alliance for Commodity Trade in Eastern and Southern Africa (ACTESA) of COMESA  
Alliance for Science - Cornell University  
Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)  
Association of Agricultural Research Institutions in the Near East and North Africa (AARINENA)  
Association of Arab Universities (AArU)  
Association of Biosafety for Australia and New Zealand (ABSANZ)  
Australian Centre for International Agricultural Research (ACIAR)  
Biosafety South Africa Biosciences Eastern and Central Africa (Beca-ILRI Hub)  
Biotechnology Coalition of the Philippines  
Biotechnology Society of Nigeria (BSN)  
CropLife Asia  
CropLife International  
CropLife Philippines  
Department of Agriculture Biotechnology Program Office, Philippines  
Department of Agriculture, Bureau of Agricultural Research, Philippines  
Department of Agriculture, Myanmar  
Department of Agriculture, Philippines  
Department of Agriculture, Plant Biotech Center, Myanmar  
Department of Planning, Myanmar  
Environmental Affairs Department, Malawi  
Emerging Ag  
Federal Ministry of Science and Technology, Nigeria

FuturaGene  
Institute of Plant Breeding - University of the Philippines Los Banos  
International Rice Research Institute  
J.R. Simplot Company  
Kenya Agricultural & Livestock Research Organisation (KALRO)  
Kenya National Academy of Sciences (KNAS)  
Kenyatta University  
Maharashtra Hybrid Seeds Company Limited (Mahyco)  
Ministry of Agriculture, Livestock and Fisheries, Kenya  
Ministry of Industry, Trade and Cooperatives, Kenya  
National Biosafety Authority, Kenya  
National Biotechnology Development Agency (NABDA), Nigeria  
National Commission for Science, Technology and Innovation (NACOSTI), Kenya  
National Committee on Biosafety of the Philippines (DOST-NCBP)  
Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DOST-PCAARRD)  
Rautaki Solutions Pty Ltd  
SEAMEO Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA)  
United States Department of Agriculture (USDA)  
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