ISAAA

IN2023

ACCOMPLISHMENT REPORT

Transforming Food & Agriculture: Innovations & Conversations

ISAAA is a not-for-profit international organization that shares the benefits of innovative bioscience technologies with key stakeholders, particularly resource-poor farmers in developing countries, through knowledge sharing, capacity building, and partnerships.

MESSAGE
FROM THE BOARD CHAIR

This past year has been another impactful year for ISAAA. ISAAA continued its strong partnerships with national, regional, and international public and private sector entities and, through these partnerships, was able to amplify its impact. Through its knowledge sharing, ISAAA contributed much to the many education, awareness-building, and consensus-building meetings held in the region.

In the post-COVID environment, ISAAA has expanded to cover some new areas of biotech applications, such as precision fermentation products and animal biotech. The move of the weekly "Crop Biotech Update" to the more encompassing "Biotech Updates" has also been well-received and attracted new readers. This reflects ISAAA's flexibility in adapting to new needs for information from stakeholders and new ways for social engagement.

Noteworthy of mention is ISAAA's strong record of working to promote biotechnology in its host country, The Philippines. In partnership with the Department of Agriculture (DA), through the Philippine Agriculture and Fisheries Biotechnology Program, ISAAA assisted in arranging many different learning opportunities, all leading to a more comprehensive landscape to support biotech applications.

The sustainability of global food systems and even political stability continued to be severely tested. With less than seven years to the targets for the Sustainable Development Goals (SDGs), SDG 17 on partnerships has become all the more important to help make progress towards many of the SDGs, foremost of which are the ones on poverty and hunger.

ISAAA continues to be viewed as a reliable partner and a trusted broker of scientific knowledge that benefits developing countries. The regular outreach to many thousands of stakeholders has helped build a global community of practice that supports the role of science and technology in development. Moving forward, the hope is to continue harnessing the many partnerships to become even more relevant and impactful.

Dr. Paul Teng
Chair, ISAAA Board of Trustees

MESSAGE
FROM THE GLOBAL COORDINATOR

This annual report is a testament to the unwavering commitment of our dedicated team at ISAAA Inc. (*SEAsia*Center) and ISAAA *Afri*Center. As a global organization, we are driven by the fundamental belief that modern biotechnology holds the key to unlocking sustainable agricultural practices, particularly in developing nations.

This year witnessed significant advancements in our mission to advocate for the adoption of this powerful technology. We are proud to have played a pivotal role in supporting developing countries. We partnered with key stakeholders in Africa and Asia to facilitate knowledge transfer and capacity building through workshops and training programs. This directly contributed to increased awareness and understanding of the benefits and potential of biotech crops in these regions. Both the Asian Short Course on Agribiotechnology, Biosafety Regulation, and Communication (ASCA) and the Africa Biennial Biosciences Communication (ABBC) are creating waves and being a strong platform to support capacity building initiatives in Asia and Africa.

ISAAA is the host of resources on gene technologies and policies and the only global database on the status of GM crops. These resources serve as a valuable tool for policymakers, researchers, and the public, providing insights into the latest developments and the positive impact of this technology.

As a global advocate for modern biotechnology, our efforts contribute to improving crop yields, increasing resilience to pests and diseases, and ultimately, ensuring food security for millions, mitigating climate change, and women and youth empowerment in agriculture and biotechnology.

However, to continue our efforts, we require your generous support. Your contributions are vital in empowering us to continue making a difference. By supporting our initiatives, you invest in building a future of food security and empowering communities.

Together, we can build a brighter future. Join us in advocating for a world where modern biotechnology contributes to a more sustainable and food-secure future for all.

We express our sincere gratitude for your continued support and partnership.

Dr. Mahaletchumy Arujanan
Global Coordinator, ISAAA-BioTrust
Executive Director, Malaysian Biotechnology Information Centre (MABIC)

MILESTONES

GLOBAL OUTREACH

Over 20,000 individuals from 172 countries

received weekly bioscience updates, demonstrating a strong global thirst for knowledge. ISAAA-led discussions reached a staggering

15.5 billion online,

amplifying the reach of biotechnology.

EMPOWERING STAKEHOLDERS

35 key players from 7 countires

gained vital knowledge in crop improvement, stewardship, and communication. Additionally,

120 representatives

from APEC economies highlighted the importance of regulatory cooperation, fostering a more streamlined future for biotech.

KNOWLEDGE DISSEMINATION

An e-learning platfrom

in the Philippines, alongside the resources added to the ISAAA portal and 52 blog articles tackling pressing topics, ensured easy access to crucial information for a wider audience.

COMMUNICATION STRATEGIES

180 delegates from 23 countries

deliberated communication approaches for NBTs, ensuring clear and effective messaging around these advancements.

FACILITATING TRADE

Over 100 conference participants

discussed easing the trade of New Breeding Techniques (NBTs), paving the way for wider access to these innovations.

PUBLIC ENGAGEMENT

Over 8,000 individuals

learned about Filipino biotechnologies ("Pinoy Biotek"), and

15,567 received answers

to their biotech queries through outreach programs. Additionally,

882 stakeholders

were enlightened about the benefits of livestock and aquaculture advancements. A separate program reached nearly 1,000 Filipino stakeholders directly.

AFRICA FOCUS

The launch of the Africa Science Dialogue and Africa Bio-innovation Hub, coupled with

80 million positive media impressions in Africa,

signifies a crucial step towards empowering the continent with biotech solutions.

MESSAGE
FROM ISAAA INC. EXECUTIVE DIRECTOR

The world has slowly emerged from the devastating effects of the COVID-19 pandemic that has negatively affected the health and well-being of the global population, trade, and economy. On the other hand, the pursuit of scientific innovations slowed down a bit but immediately recovered with more biotechnologies and products developed, which are released or in the pipeline, ready to benefit mankind.

The power of bioscience innovations to contribute to food and environmental sustainability and to improve people's lives depends on efficient and expeditious knowledge-sharing strategies. ISAAA Inc. (*SEAsia*Center) has been following the scientific breakthroughs developed through the years and thus embarked on game-changing strategies to intensify our knowledge-sharing activities, as follows:

- Wider scope, covering different organisms (crops, animals, microbes), biotechnologies (genetic modification, gene editing, gene drive), and human health and wellness, with the weekly e-newsletter appropriately renamed *Biotech Updates*
- New information resources on our website for immediate access
- Intensified use of knowledge-sharing platforms to include engagements online (website and social media), face-to-face, print, and broadcast (radio and television)
- Renewed focus on capacity building of budding scientists, regulators, policymakers, and biotech influencers
- Pioneering activities to highlight biotechnologies developed by Filipino scientists

Details on the outcome of these activities can be found in the succeeding narratives made possible by our increasing partnership with like-minded international organizations, a cadre of dedicated researchers, science writers, creative artists, and database managers.

ISAAA Inc. welcomes dedicated and supportive partners and thinkers to continue this momentum. Our mission is to strategize and implement transformative social engagements based on natural sciences and available technologies that are accessible and responsive to global technology needs.

Contact us at knowledge.center@isaaa.org for more information.

Dr. Rhodora Romero-Aldemita
Executive Director, ISAAA Inc. and
Director, ISAAA Global Knowledge Center on Biotechnology

STRATEGIC AND IMPACTFUL PARTNERSHIPS

Short Course on Crop Improvement Technologies, Biotech Stewardship, and Communication Strategies Equips Key Biotech Players

ISAAA Inc. and partner organizations have successfully conducted the 6th Asian Short Course on Agribiotechnology, Biosafety Regulation, and Communication (ASCA6) at Hotel Santika, Bogor, Indonesia on September 11-15, 2023. ASCA is a capacity-building initiative by ISAAA Inc. and the Malaysian Biotechnology Information Centre (MABIC) that was started in 2018 to create a platform for Asian scientists and regulators to be competent in the regulations and policies related to agricultural biotechnology (agbiotech). Fifteen experts from Australia, Indonesia, Malaysia, Philippines, Singapore, and Switzerland shared their knowledge and experiences with 35 researchers, scientists, regulators, industry representatives, and academics from Cambodia, Indonesia, Laos, Malaysia, Philippines, Thailand, USA, and Vietnam during the five-day ASCA6. Aside from the discussions, the participants visited the research facilities of the Regional Centre for Tropical Biology of SEAMEO (BIOTROP) in Bogor, including the stingless bee facility of BIOTROP's Entomology Laboratory, Tissue Culture Laboratory, and Biotechnology Laboratory, and a tour of the Bogor Botanical Gardens.

ASCA is an annual event conducted by ISAAA Inc. and its partners to enhance effective communication skills, understand science-based national regulatory frameworks, and provide an adequate understanding of international legal instruments related to modern biotechnology of interested parties.

Representatives from 21 APEC Economies Informed About Animal Biotech Benefits

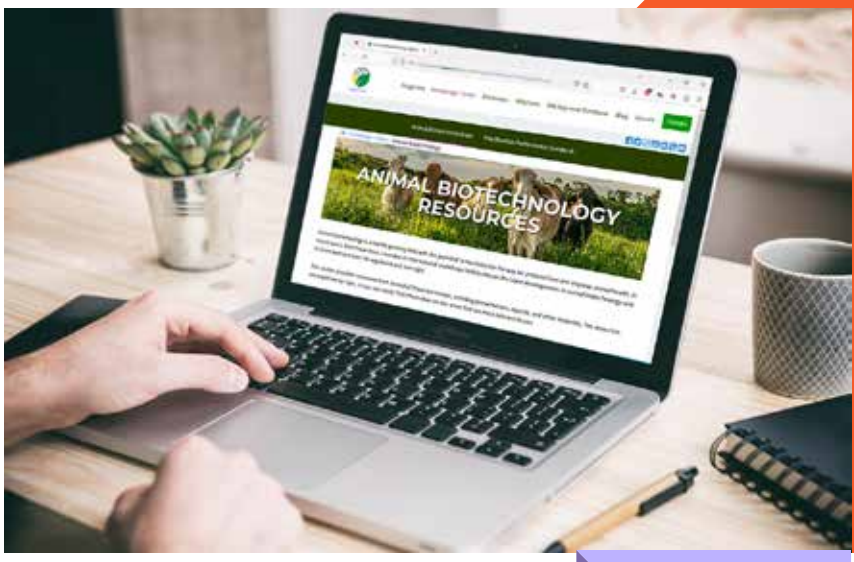
ISAAA Inc., in cooperation with the U.S. Department of Agriculture under the Asia-Pacific Economic Cooperation (APEC) High-Level Policy Dialogue on Agricultural Biotechnology (HLPDAB) Forum, conducted a virtual workshop on *Building Knowledge and Regulatory Capacity in Animal (Livestock and Aquaculture) Biotech (GE and GEd) in Response to Climate Change* on February 27-28, 2023 via Zoom. The workshop was exclusive to representatives and observers from 21 APEC member-economies. Case studies of animal biotech products were presented, including the SLICK Cattle of Accelligen, the AquAdvantage Salmon of AquaBounty, and the genome-edited sea bream and puffer fish of Kindai University in Japan. Regulators from Japan, Argentina, Brazil, and Australia tackled their respective countries' biosafety frameworks and regulatory considerations when evaluating animal biotech products. The workshop was conducted as a buildup activity for the APEC High Level Policy Dialogue on Agricultural Biotechnology held in Seattle, Washington.

120 Key Players from APEC Economies Tackle Regulatory Cooperation in Biotechnology

Over 120 representatives of Asia-Pacific Economic Cooperation (APEC) member economies convened at Seattle Convention Center in July 2023 to identify regulatory and policy solutions for science-based and risk-appropriate oversight of agricultural biotechnologies. The *Workshop on Reducing Redundancies and Facilitating Efficiencies* was organized by the US Department of Agriculture (USDA) and Agriculture Food Systems Institute (AFSI). The workshop is part of the APEC 2023 High Level Policy Dialogue on Agricultural Biotechnology (HLPDAB) activities. Representatives from ISAAA Inc. participated in the discussions to ensure that the benefits of genetically engineered and gene-edited products are given due consideration. Aside from the workshop on regulation and policy, the HLPDAB also placed a spotlight on early career scientists and their innovations to tackle new developments in agri-biotech and emphasize the role of youth in innovation. Government regulators, scientists, academics, farmer organizations, and seed industry representatives also participated in the events to share their voices on the matters discussed and ensure inclusive regulatory cooperation among the key players.

600+ Resources on Animal Biotech Accessible for Free on ISAAA Portal

Years of collaboration with the Virginia Polytechnic Institute and State University (Virginia Tech) led to the development of the Animal Biotechnology Resource. It serves as a public repository of information materials on animal biotechnology sourced from international workshops organized by Virginia Tech, USDA, ISAAA, and partners. The animal biotech resources include workshop proceedings, videos, podcasts, and presentation slides tackling the latest developments in the field as well as the regulatory approaches for consideration. The international meetings served as platforms for discourses and forming consensus on the topics. With the curated resources, regulators, researchers, students, and other key players in the animal biotech sphere are encouraged to continue learning and engaging about the topic to promote a greater understanding of the technology and harness their benefits to the environment and to society. The resource pages contains 600+ links to information and education materials, which have been visited 1,734 times since its launch.



Reaching Out to Biosafety Regulators to Tackle Gene Drives

To help promote a productive and balanced conversation on the benefits and risks of possible gene drive applications, ISAAA Inc., Outreach Network for Gene Drive Research (GDN), and the Malaysian Biotechnology Information Centre (MABIC) have conducted webinars on the topic since 2021. These e-learning opportunities were complemented with blog articles and e-newsletters to offer an interactive and holistic discourse on gene drive technologies. In its third year of collaboration, ISAAA Inc. and GDN continued to spur interest and raise awareness of the global community on the importance of gene drives through targeted initiatives such as monthly blogs and webinars. The monthly blogs, published by ISAAA in Science Speaks, covered a range of topics surrounding gene drives, such as cage trials to curb Malaria, gene flow from gene drive organisms, and the relevance of gene drives in facing biodiversity problems and fighting diseases. The blog articles reached 544,190 individuals in one year. Two webinars were conducted to tackle gene drives—one on the role of gene drives in conservation and health; and another exclusive webinar for biosafety regulators in the Philippines to explore the national and international regulatory frameworks. A total of 898 individuals participated in the webinar series.

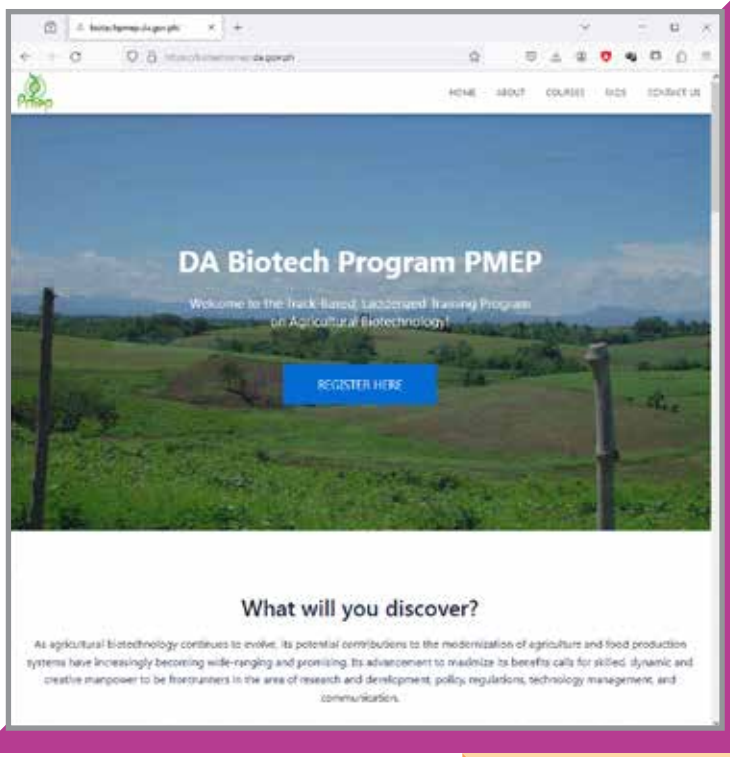
International Conference on Gene Editing Targets to Ease Future Trade of NBTs

The *International Conference on Gene Editing: Enabling Future Commercialization and Trade* organized by Murdoch University, ISAAA Inc., and Malaysian Biotechnology Information Centre (MABIC) gathered over 100 participants from Australia and other countries in April 2023 at the Australian Academy of Science's Shine Dome in Canberra. The conference assisted both small and large-scale exporters in understanding the potential of gene editing for crop improvement, and the issues related to trade in gene-edited produce. Aside from discussions about the science and applications of gene editing in crops, experts also tackled the various challenges and possible pathways towards harmonization and product-based policy regimes. The conference is part of the Package Assisting Small Exporters (PASE) program of the Australian Government's Department of Agriculture, Water and the Environment (DAWE) project on Building Capacity for Small Exporters to Exploit New Breeding Technologies. The project is implemented by Murdoch University and partners to contribute towards improving trade outcomes for exporters interested in commercializing new breeding technologies (NBTs) such as gene editing.

Promoting Gene Editing Technologies for Wider Adoption and Acceptance

ISAAA partners with 2Blades Foundation to provide updates on products developed with TALENs, an efficient gene-editing tool used by many researchers worldwide. News articles, blogs, infographics, publications, and videos on the topic are made available in a resource portal hosted on the ISAAA website, which had 4,192 views/visits since its launch. Publications on 2Blades' research initiatives are also being developed to facilitate wider acceptance of biotech and future adoption of the products.

Advancing Philippine Agri-biotech Capacity Through E-learning



ISAAA Inc, in collaboration with the Department of Agriculture Biotechnology Program Office, initiated a tracked-based ladderized training program directed at producing a cadre of skilled manpower on agri-biotech research and development (R&D), regulation, management, and communication. The training program, called Progressive Manpower Enhancement Program (PMEP), is intended specifically for researchers, scientists, regulators, and officers working at the Department of Agriculture and partner institutions. A PMEP website (https://biotechpmep.da.gov.ph) has been developed to provide an e-learning platform for the training program. The website is currently undergoing structural refinements and is expected to be fully operational in 2024. E-learning resources will be made available on the website including ladderized courses starting from novice progressing to expert. The PMEP e-learning platform offers greater accessibility, flexibility, and self-paced learning.

Boosting Filipino's Awareness of Homegrown Biotech Products

ISAAA Inc., in partnership with the Philippine Agriculture and Fisheries Biotechnology Program of the Department of Agriculture, has implemented various activities that educate different stakeholders in the Philippines about homegrown biotech products in the pipeline and available in the market. A resource page was created, and 1,000 copies of *Pinoy Biotek* magazine were printed and distributed to help increase Filipinos' understanding and appreciation of Philippine biotechnology. Students and researchers were empowered to spread information about biotechnology through hands-on science communication training. More than 400 people attended the seminars that shared the advantages and opportunities that biotechnology can bring to the Philippines. The livestreaming of the seminars reached almost 8,000 individuals around the globe. The project also reached the far-flung parts of the country by tapping the power of broadcast and internet radio.

Leveraging Various Knowledge-sharing Activities Through Multiple Channels

In July, ISAAA Inc. launched the *Know the Science 3* project, in collaboration with the Philippine Agriculture and Fisheries Biotechnology Program of the Department of Agriculture (DA Biotech). Various learning and engagement activities were conducted to help fill the existing knowledge gap among important stakeholders such as researchers, government officials, members of the academe, and consumers. As part of the project, ISAAA facilitated the launch of the perception study report, conducted the 19th National Biotechnology Week (NBW) Webinar Series, and participated in the week-long celebration of the 19th NBW in Cebu, reaching more than 6,820 people across the country. The social media campaigns, which focus on the voice of biotech researchers, the latest updates on biotech research, and answers to frequently asked questions on biotech, reached over 15,567 people on Facebook, Instagram, and TikTok.

Biotech Outreach Program Reaches ~1K Stakeholders in PH

A total of 996 representatives from the public and private sector, judiciary, House of Representatives, and the youth participated in the Biotech Outreach Program organized by the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), in partnership with ISAAA Inc., and supported by the US Department of Agriculture - Foreign Agricultural Service (USDA FAS) and US Embassy Manila. Biotech experts from various fields, including crops, animal, economics, regulations, and communication were tapped to tackle the most pressing issues surrounding biotechnology, particularly in the Philippines.

Animal Biotech Webinar Series and Public Consultations in the Philippines with B-SAFE

A webinar series sponsored by Winrock International through the Building Safe Agricultural Food Enterprises (B-SAFE) Project raised awareness of the general public on the impact of livestock and fishery biotechnology. International experts presented the current opportunities and potential benefits of trait improvements related to food and agriculture and resilience to climate change. The webinar series was attended by 882 individuals, mostly key players in livestock and aquaculture sectors.

In partnership with the Philippine Department of Agriculture, the B-SAFE Project co-organized public consultations in three locations to discuss the draft Joint Department Circular (JDC) 1, or the *Rules and Regulations for the Research and Development, Handling and Use, Transboundary Movement, Release into the Environment, and Management of Genetically Modified (GM) Animal and Animal Products Derived from the Use of Modern Biotechnology* in the Philippines.

FLAGSHIP RESOURCES

Expanding Coverage on Biotech Reporting

Over 20,000 individuals from 172 countries receive the weekly e-newsletter of ISAAA. In 2023, *Crop Biotech Update* was renamed *Biotech Updates* to address the widening applications of biotechnology and the growing demand for information. Biotech applications in plant, animal, food and feed, health, and the environment have been included in the e-newsletter. The free e-newsletter also comes with a *Gene Editing Supplement* and *Science Speaks* blog for a more thorough discourse on biotech matters.

577 Global Biotech Approvals Documented in the GM Approval Database

The GM Approval Database (GMAD) is a simple, easy-to-use, and user-friendly database that features GM crop events that have been approved for commercialization (planting) and importation (food, feed, and processing). It is one of the top online resources for such approvals worldwide. GMAD has a total of 577 approvals, with maize being the crop with the most approvals and the United States being the country with the most approvals.

Spreading Biotech Knowledge Through Social Media

ISAAA Inc. and its network of Biotechnology Information Centers are leveraging the power of social media to educate the public about biotechnology. Facebook, Instagram, X, LinkedIn, and Tiktok were used to run campaigns on topics like gene editing, gene drives, science communication, food security, and empowering women in science. This approach has been successful, with their online mentions of 3,610, reach of 15.5 billion, and collective 64,440 followers in all platforms. Engagement is also strong, with followers worldwide sharing ISAAA's posts on various topics such as biotech crop adoption, new breeding technologies, educational resources, upcoming webinars, and new biotech crop approvals. Most of the mentions about ISAAA were positive (50.5%) or neutral (45.2%).

Science Speaks: A Blog for Deeper Dives

Complementing their website and social media channels is Science Speaks, the official blog of ISAAA Inc. This platform provides an in-depth exploration of biotechnology topics through weekly articles written by ISAAA writers and invited contributors. The blog covers a wide range of subjects, including biotech crops, animal biotechnology, gene editing, gene drives, regulations in different countries, and climate change. In 2023 alone, Science Speaks published 52 articles with 46,003 visits, some of which were even picked up by other websites for wider dissemination.

MESSAGE
FROM THE AFRICENTER DIRECTOR

ISAAA *Afri*Center continues to make a significant contribution in transforming Africa's agriculture, building sustainable food and feed systems, and improving livelihoods in line with the aspirations of Sustainable Development Goals and Africa Union Agenda 2063.

We continue to deliver the benefits of modern tools to farmers. Our efforts over the years have contributed towards increased adoption of genetically modified crops in Africa, and to date, countries planting such crops have more than doubled, from three in 2013 to eight in 2023. In Kenya, our contribution facilitated progress towards planting of GM cassava National Performance Trials.

In our quest to ensure the regional benefits from emerging tools in agriculture, AfriCenter and her partners under the Striga Smart Sorghum for Africa (SSSfA) project are setting the pace towards developing a self-reliant model for commercialization of demand-driven sorghum varieties resistant to Striga, using genome editing.

One of *Afri*Center's strategic focus is fostering favorable policy for modern biotechnology in Africa's agriculture. Our continuous engagement with policymakers contributed to the passage of the biosafety law in Rwanda; the dismissal of a court case challenging the importation of GM crops in Kenya; multi-sectoral efforts towards the development of One Health governance structures across 11 African countries; as well as development of a draft National Research and Development Policy in Kenya.

*Afri*Center's unmatched potential in convening stakeholders from Africa and beyond was instrumental as we hosted our signature Symposium, the Africa Biennial Bioscience Communication (ABBC2023). Our demonstrated success in using systems thinking and stakeholder net-mapping to unpack complex multi-stakeholder sectors has enabled us to increase collaboration of One Health actors in eastern and southern Africa.

ISAAA *Afri*Center navigated tides of science politicization and increased misinformation by launching the Africa Science Dialogue, an inclusive and interactive platform that provides factual and verifiable information on technologies in agriculture, health, and the environment. We call on all like-minded partners to join hands in fighting disinformation by signing up for the Africa Science Dialogue community.

Cognizant of the ever-changing agricultural landscape in Africa and the continent's dynamic needs and challenges, ISAAA *Afri*Center seeks to expand its scope and diversify its activities beyond agricultural biotechnology. We look forward to your continued support and collaboration as we revamp our efforts to make Africa a more thriving continent.

Dr. Margaret Karembu, MBS
Director, ISAAA *Afri*Center / Chair, Africa Science Dialogue

KEY IMPACT

More Milestones Recorded in Africa's Biosafety Landscape

*Afri*Center's continuous engagement with policymakers and regulators has contributed to the passage of the biosafety law in Rwanda, the dismissal of a court case challenging the importation of GM crops in Kenya, and the approval of GM cassava planting at national performance trial (NPT) sites in Kenya. The Rwanda biosafety law, approved in July 2023, provides a framework for ensuring the safe and sustainable use of genetically modified organisms (GMO). *Afri*Center organized strategic meetings and biosafety workshops for legal teams in support of the lifting of the GMO ban in Kenya. In a landmark win, the environment court of Kenya dismissed a case that had been filed by the country's law society seeking to overturn the Government's decision to allow the cultivation and importation of GM crops and foods.

Launch of the Africa Science Dialogue

During ABBC 2023, *Afri*Center launched a new information and communication platform, the Africa Science Dialogue. This is a portal that connects experts, journalists, and members of the public to interact and share factual, verifiable, and credible information about science, technologies and innovations (STIs) in agriculture, health, and the environment, in order to foster acceptance of scientific innovations in Africa. The Africa Science Dialogue provides a platform for combating misinformation and disinformation about the above-mentioned STIs thus fostering public trust and acceptance of technologies and innovations. As one approach to addressing the challenge of misinformation, the portal provides relevant up-to-date royalty-free photos of innovations in science and technology and offers capacity-building and skill-enhancement programs for African journalists and experts.

Establishment of Africa Bio-innovation Hub (AfriBIOHub)

The AfriBIOHub is a center of competence in biotechnology and a robust agri-innovation technology platform established through the Feed the Future Striga Smart Sorghum for Africa project, a collaborative project between ISAAA *Afri*Center and other partners. The objective of the Hub is to empower Africa's rich pool of early career scientists and bio-innovators with the requisite skills to realize the socio-economic and commercial potential of their innovations. One of the programs under the AfriBIOHub is the enzyme manufacturing masterclass, a mentorship and training initiative for potential bio-entrepreneurs. Three of our inaugural beneficiaries from this mentorship initiative participated in a 3-month virtual bio-entrepreneurship program under the Iowa State University's Start-up Factory. The trio projected African scientists' desire for home-grown solutions through passionate pitches.

Best-bet Communication Approaches on New Breeding Tools Forged

The Africa Biennial Biosciences Communication (ABBC2023) Symposium, held in August 2023, provided a platform for over 180 delegates from 23 countries to deliberate on whether communication is matching up with the evolution of genetic improvement tools in agriculture. A notable highlight from the Symposium was that effective communication enhances NBTs' potential to contribute to the goals and priorities of Africa's Agenda 2063, especially in improving our food systems and planetary health. To achieve these goals, best-bet communication practices were proposed, and African states and development partners were urged to put more investment in science communication.

Increased Collaboration Among One Health Actors in Africa

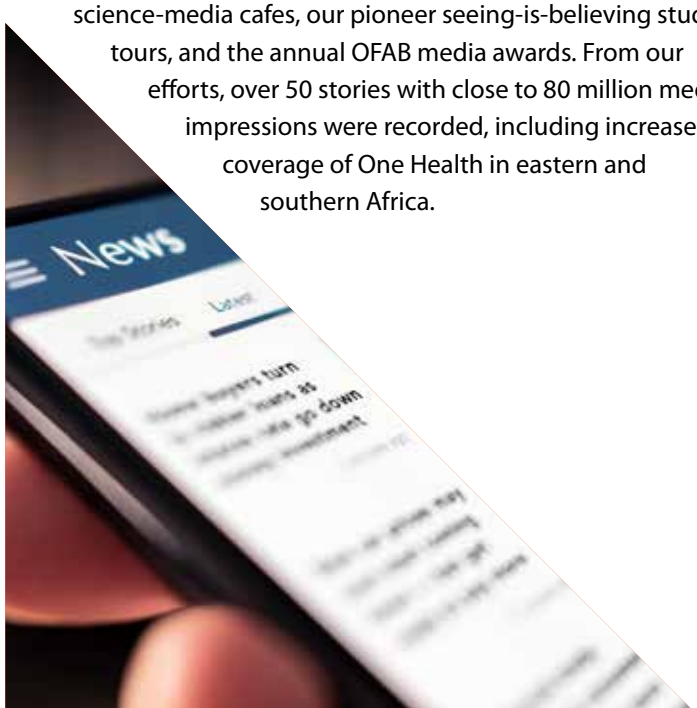
Our demonstrated success in using systems thinking and stakeholder net-mapping to unpack complex multi-stakeholder sectors has enabled us to increase collaboration of One Health actors in eastern and southern Africa. *Afri*Center, in collaboration with partners, has contributed towards the development of One Health governance structures across 12 African countries, namely Ethiopia, Kenya, Rwanda, Tanzania, Uganda, Somalia, Botswana, Namibia, Malawi, Mozambique, Zambia, and Zimbabwe. Working with partners under a project called Capacitating One Health in Eastern and Southern Africa (COHESA), AfriCenter is committed to supporting the development of National Action Plans and strategies for the application of the One Health approach through national platforms in the 12 countries.

Establishment of a National Research and Development Policy in Kenya

*Afri*Center led stakeholders in the formulation of Kenya's National Research and Development Policy. The Policy seeks to create an inclusive environment to enhance research capacities and capabilities appropriate to national needs, priorities, and resources. This Policy, which is now at the validation stage, will address the country's lack of an overarching research-specific policy. It was developed under the Research and Innovation Systems for Africa (RISA) project through support and funding from the UK International Development.

Over 80 Million Positive Media Impressions Recorded

The media remains an integral part of our core mandate. We conducted close to 20 media events in Ethiopia, Kenya, Namibia, and Zimbabwe, targeting over 250 journalists via science-media cafes, our pioneer seeing-is-believing study tours, and the annual OFAB media awards. From our efforts, over 50 stories with close to 80 million media impressions were recorded, including increased coverage of One Health in eastern and southern Africa.



ISAAA NETWORK OF BIOTECHNOLOGY INFORMATION CENTERS

MALAYSIA

The Malaysian Biotechnology Information Center (MABIC), hosted by Monash University, received a government grant for the distribution of *The Petri Dish* in Tamil language to raise the science literacy of Tamil school students. The project includes the circulation of *The Petri Dish*, Malaysia's first science newspaper, for 525 Tamil schools in the nation, making it a strong STEM resource. Online access to the newspaper is also available to schools and parents to create a co-learning environment. Roadshows conducted in several schools indicate the willingness of teachers to use *The Petri Dish* in classrooms. With this effort, it is expected that there will be an increase in students' interest in pursuing STEM later in secondary schools and universities.

JAPAN

Nippon Biotechnology Information Center (NBIC) continues to develop and distribute the Japanese translations of articles from the Biotech Updates, ISAAA's weekly e-newsletter. Over 500 individuals receive the translated Biotech Updates through the portals of the Japan Bioindustry Association (JBA), Hokkaido Bioindustry Association (HOBIA), NBIC, and other partner organizations. NBIC also contributed a chapter to the *Global Regulatory Outlook of CRISPRized Plants* published in 2023 by the Academic Press, providing updates on new breeding innovations in Japan. As of 2023, a total of 4 gene-edited products were available in the Japanese market.

PHILIPPINES

The SEARCA Biotechnology Information Center (SEARCA BIC), in collaboration with the DA Biotech Program, targets to identify pathways for the uptake of biotech innovations for food and nutrition security. This initiative focuses on strengthening collaboration between academia, industry, and government. By sharing research, technology, and policies, the project aims to empower local governments by equipping provincial units with the tools and knowledge to utilize cutting-edge biotech advancements; and leverage expertise by combining insights from academia, industry, and government to support the adoption of these innovations; and raise awareness through the local media, particularly community radio, to effectively communicate the benefits of biotechnology.

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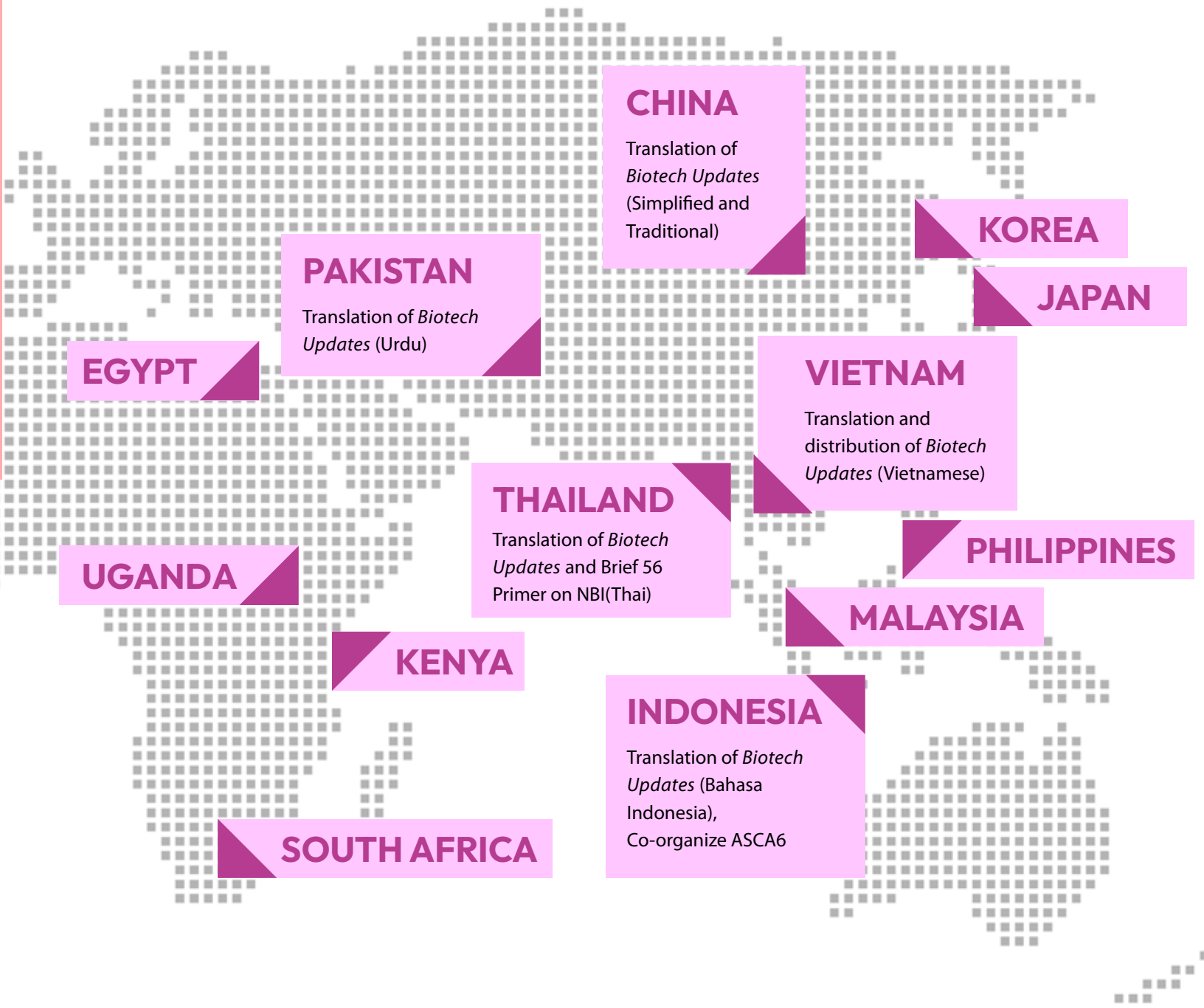
OTHER INITIATIVES



CHINA

Translation of *Biotech Updates* (Simplified and Traditional)

KOREA

JAPAN

PAKISTAN

Translation of *Biotech Updates* (Urdu)

EGYPT

VIETNAM

Translation and distribution of *Biotech Updates* (Vietnamese)

THAILAND

Translation of *Biotech Updates* and Brief 56 Primer on NBI(Thai)

PHILIPPINES

UGANDA

MALAYSIA

KENYA

INDONESIA

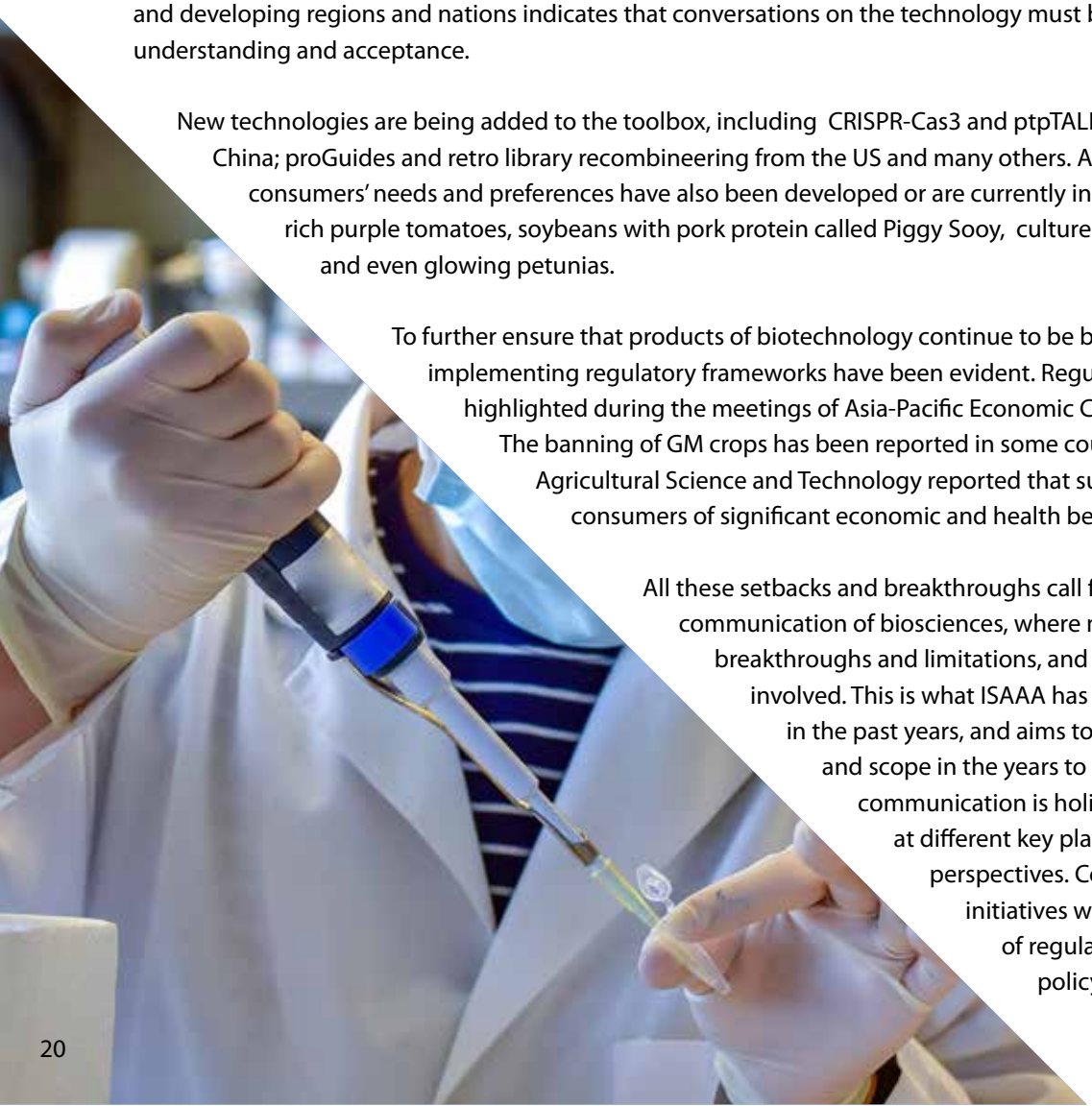
Translation of *Biotech Updates* (Bahasa Indonesia), Co-organize ASCA6

SOUTH AFRICA

TRANSFORMATIVE INNOVATIONS AND CONVERSATIONS FOR RADICAL CHANGE IN FOOD AND AGRICULTURE

Since the inception of genetic modification research in the 1970s, many questions have been raised about its successful and effective use, safety, and adoption. Amidst all the controversies and questions, the first GM crop was commercialized in the US in 1996. More GM crops followed suit until, in 2023, about 46 countries have granted approvals for cultivation and/or importation. With decades of safe use without a record of harm and millions of farmers who benefited from planting GM crops, biotech crops stayed true to their promise. The US Department of Agriculture - Economic Research Service (ERS) reported that the US farm output has tripled in 2021 from its level in 1948 because of technological advancements such as harnessing crop genetics without additional inputs at the same land area.

Researchers worldwide have resorted to using genetic engineering, especially for crops without the inherent genetic capacity to exhibit the most desirable crop traits for farmers: increase in yield, insect resistance, herbicide tolerance, and more. In the US, the top producer of GM crops globally, adoption rates of genetically engineered seeds increased rapidly over the years, with the major crops such as maize, soybean, and cotton reaching over 90% adoption rate in 2023. However, amidst the success stories of GM crop adoption and approvals, misinformation continues to persist. A paper published in *GM Crops and Food* reported that most misinformed articles originated from North America, while Africa has the highest proportion (20%) of misinformation in its media coverage. The continuous misinformation in both developed and developing regions and nations indicates that conversations on the technology must be fostered to facilitate public understanding and acceptance.



New technologies are being added to the toolbox, including CRISPR-Cas3 and ptpTALECDs from Japan; CyDENT from China; proGuides and retro library recombineering from the US and many others. A plethora of products tailored to consumers' needs and preferences have also been developed or are currently in the pipeline, such as antioxidant-rich purple tomatoes, soybeans with pork protein called Piggy Sooy, cultured beef rice, rice from the ocean, and even glowing petunias.

To further ensure that products of biotechnology continue to be beneficial, interventions in implementing regulatory frameworks have been evident. Regulatory cooperation was highlighted during the meetings of Asia-Pacific Economic Cooperations (APEC) in 2023. The banning of GM crops has been reported in some countries, but the Council for Agricultural Science and Technology reported that such decisions deprive farmers and consumers of significant economic and health benefits.

All these setbacks and breakthroughs call for a transformative communication of biosciences, where messages are based on scientific breakthroughs and limitations, and packaged for the stakeholders involved. This is what ISAAA has been successfully conducting in the past years, and aims to continuously widen its targets and scope in the years to come. The ISAAA brand of communication is holistic and synergistic, targeted at different key players and attending to various perspectives. Continuous capacity-building initiatives will be fostered to build the skills of regulators, students, researchers, and policymakers. We lean in to listen

and respond to the voices of consumers and farmers, who are the primary beneficiaries of biotechnology, as well as the bioscience information needs of the media Dynamic partnerships will continue to be fostered to facilitate more helpful initiatives and interventions. Institutionalizing science communication continues to be a primary target in our future projects, with the hope of building a cadre of communicators who will speak for the technology themselves. These efforts will ultimately lead to a radical change in the global landscape of biotech and the discourses surrounding the technology, ushering to a greater appreciation and acceptance of biosciences at large, as it continues to fulfill its promises in securing the world's food needs in a sustainable manner.

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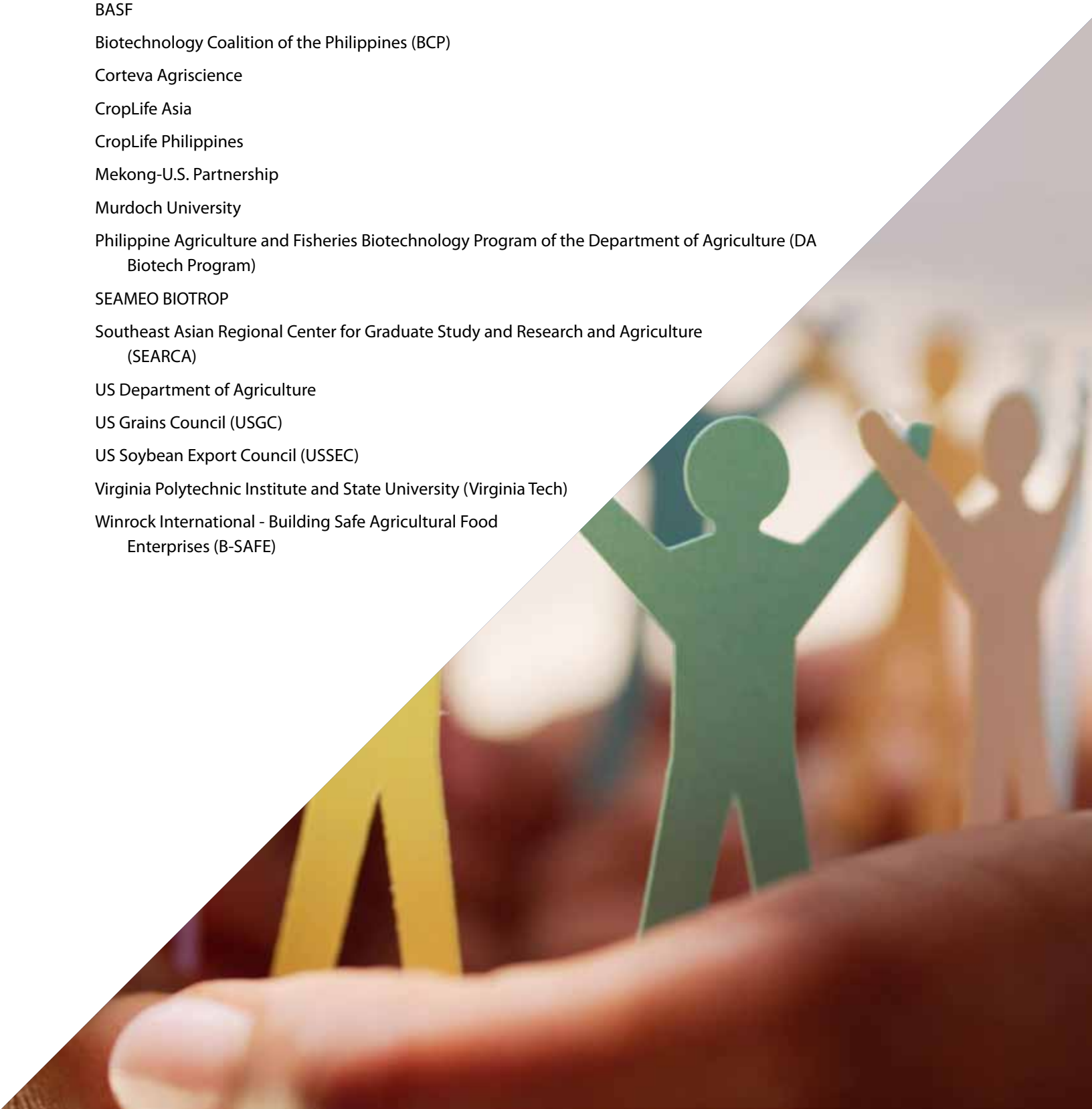

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