

South Asia Biosafety Program

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BANGLADESH

4th IPFS-ICBHA-2019 Conference Concluded with Huge Participation from Biotechnologists

Dr. Sabrina M. Elias, Independent University



Honorable Agriculture Minister, Dr. Abdur Razzak, MP, delivering his speech at the 4th IPFS-ICBHA-2019 conference. Sitting on the dais (from left to right): Prof. Dr. Imdadul Hoque, Dean, Faculty of Biological Sciences, University of Dhaka; Prof. Dr. Emran Kabir Chowdhury, Vice Chancellor, Comilla University; Prof. Dr. Kazi Shahidullah, Chairman, University Grants Commission; Prof. Dr. Akhtaruzzaman, Vice Chancellor, University of Dhaka; Dr. Wais Kabir, Executive Director, Krishi Gobeshona Foundation; and Prof. Dr. Zeba Islam Seraj, President, Global Network of Bangladeshi Biotechnologists.

The Global Network of Bangladeshi Biotechnologists, commonly known as GNOBB, along with Innovations in Plant and Food Sciences (IPFS), a consortium of seven universities from Japan, China, Canada, and Bangladesh, organized the 4th IPFS-International Conference on Biotechnology in Health and Agriculture 2019 (IPFS-ICBHA-2019) on November 11-13, 2019. Out of the 420 registered participants, there were more than 250 students from all over Bangladesh. Among the rest of the eminent scientists presenting their work, there were speakers from Canada, China, India, Germany, Japan, UK, and USA.

Dr. Muhammad Abdur Razaque, MP, Honorable Minister, Ministry of Agriculture, Government of the People's Republic of Bangladesh, graced the inaugural ceremony as Chief Guest, and the opening ceremony was chaired by Prof. Dr. Md. Akhtaruzzaman, Honorable Vice Chancellor, University of Dhaka. Dr. Kazi Shahidullah, Chairman, University Grants Commission of Bangladesh, Prof. Dr. Emran Kabir Chowdhury, Honorable Vice Chancellor, Comilla University, and Dr. Wais Kabir, Executive Director, Krishi Gobeshona Foundation were present as Special Guests at the conference. Prof. Dr. M. Imdadul Hoque, Dean,

Faculty of Biological Sciences, University of Dhaka represented the IPFS. Honorable Agriculture Minister, Dr. Abdur Razaque, proudly mentioned the stance of the Bangladeshi government on genetically modified crops, remarking on the successful launching of Bt Brinjal among farmers, and talked about facilitating the release of Golden Rice. He brought the

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attention of the scientists to the success of modern agricultural practices, including hybrids, genetic modification, etc., without which it would not have been possible to combat the devastating famines in the past few decades. He proudly cited Bangladesh

as a signatory to the Cartagena Protocol on Biosafety and acknowledged the kind gesture of the government to improve agricultural research in Bangladesh.

Three scientific sessions were held at the conference, emphasizing plant and agriculture, food and environment, and health and medicine. Climate smart agriculture, environment protection, and personalized medicine were focused on, and steps to give priority to translational research was discussed. The South Asia Biosafety Program sponsored a session on biosafety and environment.

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Dr. Andrew Roberts, Deputy Executive Director, ILSI Research Foundation, delivering the keynote speech in the session on biosafety and environment during the second day of the 4th IPFS-ICBHA-2019 Conference. Seated on the dais (from left to right): Dr. Ananda Mustafiz, Assistant Professor, South Asian University and Dr. Aparna Islam, Country Manager, South Asia Biosafety Program.

GNOBB recognized two outstanding Bangladeshi scientists working in Bangladesh and abroad as recipients of the GNOBB Award. This year, Dr. Firdausi Qadri from icddr,b was given the GNOBB Award as the outstanding Bangladeshi scientist working in Bangladesh, and Dr. Nasir Uddin from Texas A&M University Health and Medicine Center, was honored as the outstanding non-resident Bangladeshi scientist. GNOBB awardees for 2017 and 2019 delivered their award lectures during the conference. To encourage young scientists and students, awards were given to the top oral presenters and poster presenters.

The conference was accompanied by two pre-conference workshops. This year, workshops were conducted on bioinformatics and hands on

experimentation with CRISPR/Cas9. Both were highly appreciated by the participants.

The three-day long international conference was themed around molecular interventions for food, feed, health, and environment, and it welcomed speakers from Bangladesh, Japan, China, Canada, Germany, India, Malaysia, UK, and USA. This conference appeared as the largest platform for Bangladeshi biotechnologists based locally and abroad to meet and exchange thoughts, ideas, and experimental findings. The efforts of GNOBB in combining the scientists based locally and abroad under the same roof was very much appreciated.



Seated (from left to right): GNOBB Awardee - Dr. Md. Nasir Uddin, Dr. Syed Saleheen Qadri, GNOBB President - Prof. Dr. Zeba Islam Seraj, and GNOBB Awardee - Dr. Firdausi Qadri. Standing in front of the dais: students and young scientists who received awards for the Poster and Lightning Round Sessions, with their plaques. Standing behind the dais: members of the organizing committee and volunteers.

BANGLADESH Experience of the 1st Place Prize Recipient of the 7th Annual South Asia Biosafety Conference Poster Competition

Dr. M. G. Mostofa, Bangabandhu Sheikh Mujibur Rahman Agricultural University

Ten years back, I attended a week-long IPR training course organized by FAO-BARC and came across the biosafety-related issues of Bangladesh. Meanwhile, I finished my masters, doctoral, and postdoctoral studies from Japan and returned to Bangladesh last September. I was always curious about the biosafety status of Bangladesh, particularly when I realized how seriously this issue is addressed and regulated in developed countries like Japan. Certainly, this year's South Asia Biosafety Conference provided me with the opportunity to know how biosafety guidelines are implemented and currently practiced at the practical levels in Bangladesh.

Dr. Muhammad Abdur Razzaque, MP, Honorable Minister, Ministry of Agriculture, Government of the People's Republic of Bangladesh

mentioned in his inaugural speech at the 7th Annual South Asia Biosafety Conference (SABC 2019) that "Bangladesh is committed to ensuring biosafety. I also wholeheartedly expect that Bangladesh will be able to properly adapt biosafety guidelines to ensure food safety and security for sustainable agriculture in its climate-driven environment." Bangladesh has glorious achievements in the agricultural sector in the recent past, and scientists, researchers, farmers, and policymakers are committed to keeping this pace to feed its heavily growing population. Undoubtedly, besides our traditional crops, biotechnological interventions, through the production of genetically modified organisms (GMOs), also contribute a lot to achieving food self-sufficiency. However, we must ensure the biosafety-related issues when it comes to using GMOs at the

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Dr. M. G. Mostofa, speaking during the Lightning Round for Students and Early Career Researchers at SABC 2019 (September 14, 2019)

environmental levels. I strongly believe that the South Asia Biosafety Program (SABP) could be a great platform to regularly assess various food safety-associated issues and escalate awareness within Bangladesh.

This three-day event was greatly informative, with discussion of biosafety policies and regulatory frameworks currently implemented not only in Bangladesh, but also in other countries, including India, Bhutan, Sri Lanka, and Nigeria. It was a great opportunity to hear ideas and experiences from different experts working at the policy level in these countries. I was particularly interested in the impacts of renowned “Bt brinjal technology” on Bangladesh’s agriculture. Dr. Akhter Ahmed from the International Food Policy Research Institute, Bangladesh, provided the attendees with clear data on the positive influence of this technology on the livelihood of farmers in Bangladesh.

BANGLADESH

Experience of the 2nd Place Prize Recipient of the 7th Annual South Asia Biosafety Conference Poster Competition

Dr. Dipali Rani Gupta, Bangabandhu Sheikh Mujibur Rahman Agricultural University

I am pleased, honored, and humbled to receive the second prize for the poster competition at the 7th Annual South Asia Biosafety Conference (SABC 2019), which was held September 14-16, 2019 in Dhaka. I express my sincere gratitude to Prof. Dr. Tofazzal Islam, my colleague and mentor, for encouraging me to participate in this poster competition and receiving the award on my behalf. I would like to especially thank Moutoshi Chakraborty and Shabab Meheub for productive interactions and prolific exchanges of ideas during the preparation of the posters. I also would like to thank all of my students who directly contributed to this research work. A very special thanks is also owed to the SABC 2019 evaluation and judging committee for awarding my poster.

It was my second time participating in the South Asia Biosafety Conference, and I have benefited greatly from this conference. It was a large gathering of scientists from around the world, and I shared and received lots of ideas from the participants, not only on the biosafety rules and regulations during the plenary session, but also cutting edge



Dr. Dipali Gupta at the Inaugural Session of SABC 2019 (September 14, 2019)



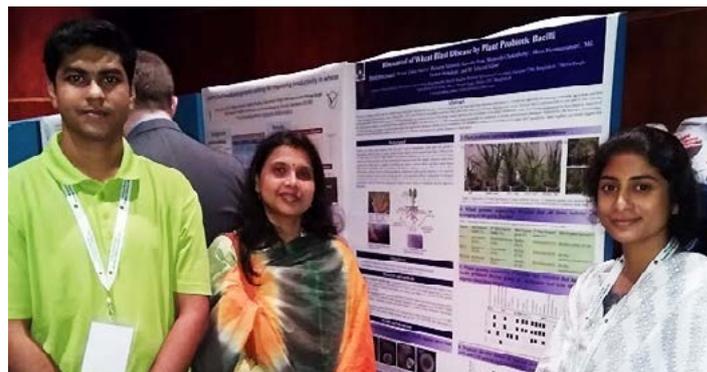
Dr. M. G. Mostofa at the Poster Session of SABC 2019 (September 14, 2019)

I had the opportunity to share my work through the Lightning Round for Students and Early Career Researchers and Poster Program. I was really overwhelmed to see the interest of scientists from different areas, and I was really encouraged by them to continue my research work in the field of phytohormonal biology.

I felt honored to win the first prize for the Poster Competition. I would like to thank the SABC 2019 organizing committee, and I will surely carry this recognition as a boost to strengthen my career in the field of agricultural biotechnology. Finally, I would like to thank SABP, ILSI Research Foundation, and Biotech Consortium India Limited for organizing this meaningful and much needed event for this region.

research technology such as CRISPR/Cas9 genome editing. It was indeed a very fruitful experience for me when I met another poster presenter beside me (Dr. Mamrutha). I learned how genome editing in wheat using CRISPR/Cas9 could be done in a simple way. This has motivated me and reinforced my confidence to use CRISPR/Cas9 in my research work.

The recent occurrence of wheat blast pathogens in Bangladesh drove our team towards developing mitigation approaches for this disease. Biological control of wheat blast is one of the ecofriendly management approaches. Among microorganisms, *Bacillus* is very well known for its growth promoting activity. Some of them are reported to function as biological control agents. In our poster, we presented how *Bacillus* spp. can inhibit growth of blast fungus and induce systemic resistance in the plant. This is the outcome of one of my masters student’s research work and is aimed at validating *Bacillus* spp. as a biocontrol agent against wheat blast fungus, a cereal killer on the run.



Dr. Dipali Gupta at the Poster Session of SABC 2019 (September 14, 2019)

Participation of ICAR Early Career Scientists Supported by the Donald Danforth Plant Science Center at the 7th Annual South Asia Biosafety Conference

Dr. Vibha Ahuja, Biotech Consortium India Ltd



ICAR early career scientists at SABC 2019 (September 14, 2019) (from left to right): Dr. Mamrutha H. M., Dr. Neetu Singh Kushwah, Dr. Vibha Ahuja (Biotech Consortium India Limited), Dr. Donald MacKenzie (Institute for International Crop Improvement at the Donald Danforth Plant Science Center), Dr. Manoj V. M., and Dr. S. Sundaresha.

The 7th Annual South Asia Biosafety Conference (SABC 2019), a regional gathering of scientists, regulators, and other stakeholders interested in biotechnology applications for sustainable development, environmental risk assessment, and biosafety regulation in South Asia was held at the Westin Dhaka, Bangladesh, from September 14-16, 2019. SABC 2019 was co-organized by the ILSI Research Foundation and Biotech Consortium India Ltd, under the auspices of the USAID-funded South Asia Biosafety Program, with cooperation from many regional partners. The conference also had a poster session supported by the International Society of Biosafety Research.

The conference was attended by 157 participants from 10 countries. Participants included a cross section of regulators, scientists, central and state government officials, industry representatives, and students.

The Institute for International Crop Improvement at the Donald Danforth Plant Science Center supported the participation of four early career scientists from various research institutions under the Indian Council of Agricultural Research. The objective of supporting their participation was to give them an opportunity to learn about recent developments in agricultural biotechnology and biosafety.

EXPERIENCE OF DR. S. SUNDARESHA, SCIENTIST, ICAR-CENTRAL POTATO RESEARCH INSTITUTE, SHIMLA

SABC 2019 was organized by the ILSI Research Foundation, USA and Biotech Consortium India Limited, under the auspices of the USAID-funded South Asia Biosafety Program in Dhaka, Bangladesh this year. The conference was decorated with scientists of repute, biosafety regulators, technology developers, and students. It provided me with an opportunity to explore and understand country-specific biosafety regulatory frameworks for development and release of genetically modified organisms (GMOs) from Bhutan, India, Sri Lanka, Bangladesh, Nigeria, and India.



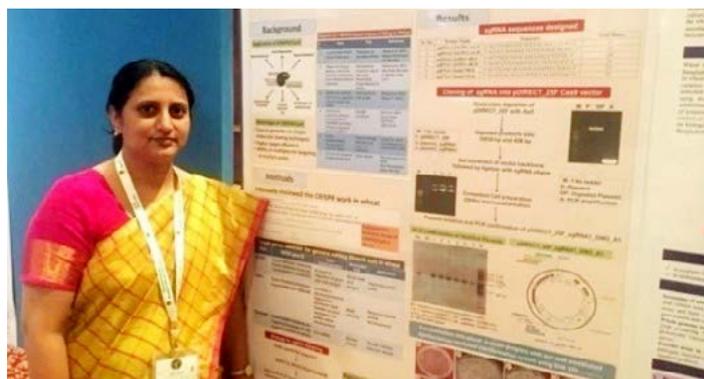
Dr. S. Sundaresha at the Poster Session of SABC 2019 (September 14, 2019)

The session on 'Rationalizing Risk Assessment and Regulation of Low Risk Activities' was of particular interest to me as it explored characteristics of food products derived from GMOs and genome editing that are low-risk. Products of genome editing need rational and proportionate risk assessment. There was discussion on what constitutes novel combination of genetic material. The session on 'Biotechnology Research and Development in South Asia' addressed important biotic and abiotic challenges faced by South Asian farmers, including talks on drought tolerant rice in Sri Lanka, improvement of grain legumes in Bangladesh, *Colocasia esculenta* tuber Agglutinin, mediated resistance against mustard aphids, and Bt Brinjal in Bangladesh. The workshop on genome editing discussed the science of genome editing and provided clarity about the technology and how it could be utilized as an advanced breeding approach for crop improvement. Dr. Frederic Triplet from the UK talked about the use of gene drives in *Anopheles gambiae* for malaria control in Africa. Gene drives and CRISPR/Cas9 technology can potentially alter populations of *Anopheles gambiae* in order to address human health and environmental protection goals. Genetically sterile mosquitoes were released in Burkino Faso in 2019 in an effort to control malaria.

Overall, this conference convened sessions on concepts, challenges, and opportunities in agricultural biotechnology, genome editing, and regulatory laws and reviews on the release and development and use of GMOs and genome edited products.

EXPERIENCE OF DR. MAMRUTHA H. M., SCIENTIST, ICAR-INDIAN INSTITUTE OF WHEAT AND BARLEY RESEARCH, KARNAL, HARYANA

SABC 2019 was organized by the ILSI Research Foundation and Biotech Consortium India Limited on September 14-16, 2019 at the Westin, Dhaka, Bangladesh. This is a premier biosafety meeting in South Asia, and I got an opportunity to hear from leading scientists



Dr. Mamrutha H. M. at the Poster Session of SABC 2019 (September 14, 2019)

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representing regulatory agencies, public sector research institutions, and the private sector in South Asia and also from other countries.

I got a good exposure and learning on transgenic research and biosafety issues by participating in SABC 2019. During the conference, several talks on biosafety regulations in South Asian countries and in other countries were given. We got to know about the impact of Bt brinjal in Bangladesh and its benefit for farmers. The sessions immensely improved my knowledge on transgenics development and their requirements for commercialization. During the poster session, I came to know about extensive research programs going on in wheat blast in Bangladesh, and I interacted with scientists and research fellows for probable collaborations in this area of research. The Lightning Round was very impressive, with presentations on research in diverse crops. I actively participated in the workshop on gene editing and regulations and understood the documents submitted by scientists to get permission for commercialization of transgene free gene edited products, mainly for non-browning mushroom and high oleic soybean. I was able to interact with policy-making people across South Asia and discuss transgenic research and its importance in agriculture with them. There were some impressive talks on social mobilization strategies towards positive regulatory outcomes for transgenics. Overall, this conference helped me understand the perception, challenges, and opportunities in the development and release of transgenic and gene edited products across various countries. Finally, I would like to thank the Institute for International Crop Improvement at the Donald Danforth Plant Science Center and Biotech Consortium India Ltd. for their financial support for my participation in the conference. This helped me in prioritizing many issues in my research on gene editing in wheat, by keeping in mind the present policy and commercialization strategies.

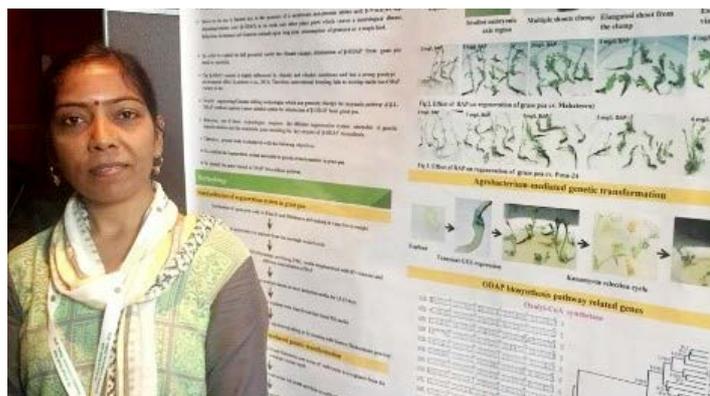
EXPERIENCE OF DR. NEETU SINGH KUSHWAH, SCIENTIST, ICAR-INDIAN INSTITUTE OF PULSE RESEARCH, KANPUR

My participation in the 7th Annual South Asia Biosafety Conference (SABC 2019) in Dhaka, Bangladesh from September 14-16, 2019 was supported by the Institute for International Crop Improvement at the Donald Danforth Plant Science Center and Biotech Consortium India Ltd. through the Travel Support for Early Career ICAR Scientists Program. I presented my paper entitled "Towards development of β -ODAP free variety of grass pea (*Lathyrus sativus* L.)" in the Lightning Round session of the conference. I also participated in the "Gene Editing and Regulation" workshop. It was a very interactive session where all the participants were familiarized with gene edited products by providing two case studies, one on non-browning mushroom and the other on high oleic soybean, where small deletions were made in the coding part of endogenous genes using gene editing technology, and the final gene edited product/variety did not carry any foreign DNA or transgenes. After thorough reading of case studies by attendees, the organizers facilitated a discussion on several aspects of gene edited products, including whether gene edited products should be regulated. Most

of the participants reached the conclusion that small deletions in the gene edited product should not be regulated if the final gene edited product did not carry any foreign DNA or transgenes or antibiotic selection markers. In the workshop, regulatory guidelines developed by different countries for the release of gene edited products were also discussed. Various plenary sessions of the conference provided me with an opportunity to be exposed to biotechnology research and development in South Asia and the genetically engineered crops that are under development in public sector organizations, as well as the impact of fruit and shoot borer resistant Bt Brinjal in Bangladesh on local farmers. Overall, this conference was a wonderful opportunity for me to present my research work internationally and to meet and interact with crop experts from public sector institutions and regulatory agencies in South Asia and internationally. It also exposed me to ongoing priority research areas in GM crops in different countries.

EXPERIENCE OF DR. MANOJ V. M., DIVISION OF CROP IMPROVEMENT, ICAR-SUGARCANE BREEDING INSTITUTE, COIMBATORE, TAMIL NADU

I am very much thankful to Dr. Vibha Ahuja and Dr. Manish Sharma, BCIL, the ILSI Research Foundation, and all other co-sponsors for the wonderful opportunity given to me to attend the 7th Annual South Asia Biosafety Conference held in Dhaka, Bangladesh. Beginning with the inaugural session until the close of the conference and maybe beyond, Dr. Andrew Roberts, ILSI Research Foundation, had remarkable energy and enthusiasm, which was making everyone comfortable and relaxed. Dr. Bhavneet Bajaj from the ILSI Research Foundation also worked throughout the sessions to make this event successful. Through the sessions, many experienced scientists, such as Dr. Arunendra Nath Lahiri Majumder, Dr. Sampa Das, Dr. Donald MacKenzie, Dr. Rob Bertram, Dr. Francis Nwankwo Onyekachi, Dr. Deepak Pental, Dr. Ramaiah Valasubramanian, Dr. Frederic Triplet, Dr. Inez H. Slamet-Loedin, and many more talked about their area of research with an emphasis on biosafety. The sessions had interactive discussions, including ones on regulatory bodies, Cartagena Protocol on Biosafety, proportionality of regulation to risk, GM crops under cultivation, GM mosquito to prevent malaria, etc. The latest genome editing technologies like CRISPR/Cas9, TALENS, ZFN, etc. were discussed during the sessions and its technical or practical difficulties, along with their high impact in resolving agricultural challenges, were also brought into light. The Lightning Round for young scientists was breathtaking, where Dr. Andrew Roberts managed presenters' talk for a specified length of time. Workshops held for the delegates were very interactive and gave in-depth knowledge of the topic that was discussed. Group discussions during the workshops made everyone appreciate the topic and provided an opportunity for attendees to express their views about GM crops and their implications. It was a well-organized conference, with effective time management of all scientific sessions and covered biosafety and biotechnology research in South Asian nations, as well as other countries.



Dr. Neetu Singh Kushwah at the Poster Session of SABC 2019 (September 14, 2019)



Dr. Manoj V. M. at the Poster Session of SABC 2019 (September 14, 2019)

EVENT	ORGANIZED BY	DATE	WEBSITE
BANGLADESH			
9 th International Plant Tissue Culture & Biotechnology Conference	Bangladesh Association for Plant Tissue Culture and Biotechnology (BAPTC&B)	February 8-10, 2020 Dhaka	http://baptcb.org/conference/
INDIA			
107 th Indian Science Congress	Indian Science Congress Association, Kolkata and the University of Agricultural Sciences, Bengaluru	January 3-7, 2020 Bengaluru	https://isc2020uasb.org/
7 th International Conference on Phytopathology in Achieving UN Sustainable Development Goals	Indian Council of Agricultural Research, Indian Agricultural Research Institute, and Indian Phytopathological Society, New Delhi	January 16-20, 2020 New Delhi	http://igau.edu.in/
Global Potato Conclave 2020	Indian Council of Agricultural Research-Central Potato Research Institute, Shimla and Indian Potato Association, Shimla	January 28-31, 2020 Gandhinagar, Gujarat	http://gpc2020.in/
ICPulse2020 - International Conference Pulses the Climate Smart Crops: Challenges and Opportunities	Indian Society of Pulses Research and Development and ICAR-Indian Institute of Pulses Research and Indian Council of Agricultural Research	February 10-12, 2020 Bhopal, Madhya Pradesh	https://iipr.icar.gov.in/pdf/ICPulse2020.pdf
ICB 2020 - International Conference on Banana	ICAR-National Research Centre on Banana, Bioversity International, Society for Promotion of Horticulture, and Indian Council of Agricultural Research	February 22-25, 2020 Trichy, Tamil Nadu	http://www.icb2020.in/index
Training Program on Genomics for Improvement of Horticultural Crops	ICAR-Indian Agricultural Research Institute	February 24-March 5, 2020 New Delhi	https://www.iari.res.in/files/Latest-News/Brochure_Genomics_for_Improvement_of_Horticultural_Crops_02092019.pdf



SOUTH ASIA
BIOSAFETY PROGRAM

The South Asia Biosafety Program (SABP) is an international developmental program implemented in India and Bangladesh with support from the United States Agency for International Development. SABP aims to work with national governmental agencies and other public sector partners to facilitate the implementation of transparent, efficient, and responsive regulatory frameworks for products of modern biotechnology that meet national goals as regards the safety of novel foods and feeds, and environmental protection.



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