

# OTHER PARTNERS

## Broadening Links in Knowledge Sharing

**T**he participation of different “publics” in the transparent debate on biotechnology contributes to its greater awareness and understanding. It also helps bridge the gap caused by the tensions between science and society. Each stakeholder contributes to the debate such that a “public voice” leads to the formative stages of decision-making. Gaskell et al. (2005) says that engagement with other communities on the implications of science and technology results in “socially viable paths for scientific innovation.” Allowing diverse publics to contribute to discussions on biotechnology democratizes decision making. In the process, divergent

interpretations of scientific phenomena and nontechnical concerns can be dealt with.

The tasks involved in knowledge and information sharing are best accomplished through networks and partnerships, and in the collective efforts of different groups. The end goals are attained faster, individual efforts complement and add to the greater good, and resources are shared across sectors.

This section shares the stories of students, representatives from industry, and similar organizations engaged in information, education and communication efforts in crop biotechnology.

# STUART SOO

## The Businessman Talks Biotech

By Mahaletchumy Arujanan and K. Cheng Liew

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Since Malaysia's National Biotechnology Policy was enacted in 2005, the industry has been buzzing with anticipation for greater development of science and technology as a tool for wealth creation and national well-being. The nine thrusts outlined by the policy reflect the intention of the government to leverage Malaysia's existing capabilities and move them up the value chain through commercialization. Two years down the road, the country has been building upon its infrastructure and research capacity, as it anticipates the surge of industry research and development (R&D) requirements. Discussions with personalities in the industry have yielded one pressing question - "How do we commercialize the end products of research into something that the Malaysian public can accept, and who can?" The difficulty of translating hard-edged science into savvy consumer products is one of the greatest challenges of the biotechnology industry today. The main reason behind such difficulties is the gap of knowledge in the "science" of the commercialization process.

Many research institutions and local universities have understood such challenges and have begun to hop on the bandwagon by establishing their own commercialization branches, while others have contracted companies specializing in this area of expertise, especially to aid them in the commercialization of their innovations. One such company dedicated to product development technologies is the Furley Group of companies. Located amid the drab walls of an industrial area in Puchong, Malaysia, one would be hard-pressed to correlate the place with innovation and the vibrant creativity associated with the company's expertise. However, upon entering the office, amid delicate



*Stuart Soo (left) discusses product development with Daniel Baskaran Krishnapillay, former FRIM director.*

antique teak furniture, the company seems to be a beehive of activity. Group Managing Director, Stuart Soo, is exactly alike in this manner, a genteel gentleman, who upon first impression is private and unassuming. However, his dry wit and enthusiasm prove that there is more than what may be seen at first glance.

Mr. Stuart has been active in the business development and operation line in the Asia Pacific region for more than 30 years. Initially an outsider in technology transfer and biotech production commercialization, he graduated from the Auckland University of Technology in 1973. He worked with several multinationals before venturing into Technology Transfer Management with certification from the United Nations Industrial Development Organization (UNIDO) and The International Centre for Science and High Technology (ICS). His experiences in biotechnology began as his previous

employer bought a technology-based company with quite a number of scientists in it. Since then he has been in the line of contract manufacturing for more than 20 years before finally opting to return to the country in 2001. He worked with many companies in New Zealand, China, Hong Kong, and Thailand and is particularly experienced in the commercialization and development of nutraceutical, food and beverage products.

### ***Product Development Process***

“Around the end of 2001, after a stint in China, I decided that it was time for me to come back (to Malaysia). On the basis of my (years of) experience, I started Furley, with the help of a partner mainly to work on the transfer of technology especially in bioactive compounds,” he states. “We generally deal with product development, from cradle to grave, or as we say, from the plantation to the finished products on the shelves.”

To illustrate his point, Mr. Stuart perused a flow chart outlining the chain of commercialization, beginning with a scientific finding and ending with the launch of a product. “Science is only one part of the story,” he says. “The process of commercialization does not only end with innovation. In fact, a long drawn out process, which involves assessing the market trends and its needs, potential profits, documentations required, project planning, cost, supply and supply chain, production design, etc., pretty much makes the process of commercialization mystifying to most.”

From a vast range of products on display, it would be obvious to the spectator that Furley Group is unlike most companies. With products like optimum DHA milk formula to osteoarthritis-preventing supplement, and also the world’s first all-natural skin-whitening product line with antioxidants derived from mangosteen extracts, Furley is gifted with the ability to bridge the gaps between

innovation and commercialization to bring novel products into the Malaysian and overseas market.

“In fact, we shall be launching some of our products. We have jointly developed with FRIM (the Forest Research Institute of Malaysia), an alternative functional soft-serve ice cream [ice confection] made from whole mangosteen fruit technology which is both fat-free, cholesterol free, low sugar and high in antioxidants,” enthuses Mr. Stuart. “The event would be graced by the H.R.H Sultanah Hajjah Kalsom, Sultanah of Pahang, and would be the beginning of a series of products developed with FRIM.”

When queried on the projected development of such a vibrant company, Mr. Stuart was optimistic with its expansion, with an extraction plant being slated to be completed in mid-2009. Similarly, a plantation project is underway in Pahang in a joint venture with several non-government organizations (NGOs). The plantation project will see the company allocating land and imparting good farming practice and management technologies for rural farmers to manage the planting of several local herb species, with a guarantee buyback of their crops. This is in line with the recent government policy of improving the lifestyle status of rural folks.

“For the (plantation) project, we are echoing the government’s call for businesses to assist rural folk by providing them land and opportunities under a ‘one family one business’ scheme. This will also help us solve the problem of our supply chain, as multinationals consider this issue of great importance. It is also my personal conviction, as I believe that I do not need to ‘rape’ our forests to do good business.”

### ***From Businessman to Communicator***

Being a businessman at heart, Mr. Stuart did not anticipate the day when he would become a science communicator. Being involved with various

industry stakeholder organizations, including the Malaysian Bio-industry Organization (MBIO), he is known to be active in the industry as a proponent for biotechnology. Being a participant to various key biotechnology events, he is well known among industry players and scientists alike. However, the businessman became educator and advocate when he was invited by the Malaysian Biotechnology Information Center (MABIC) to speak at the seminar *The Convergence of Biotechnology and Biodiversity in Wealth Creation* jointly organized by Sarawak Biodiversity Centre in Kuching, Sarawak in 2007.

“It was a very interesting experience, as it was pretty much my first time to talk to the public on biotechnology and its various opportunities,” Mr. Stuart says. “However, I believe that my talk was well-received, with a healthy discussion being established. In fact, we managed to begin

talks on several business opportunities, including helping a Kuching-based biotech company to bring their product to the international market. I got an invitation to give another talk during the Biodiversity and Biotechnology Symposium 2008. It feels great to be appreciated,” he says.

“I work closely with MABIC as well as the International Service for the Acquisition of Agri-biotech Applications (ISAAA) on various issues in biotechnology. I pick up many useful tidbits of knowledge from their various publications,” he comments. “I sincerely hope to be able to continue this collaboration further in the future as I anticipate more up-to-date information on local and international events and happenings. I also hope that MABIC could initiate greater dialogue in the industry as many industry players are ill-informed about various aspects of biotechnology.” □

She has been hailed as a crusader for championing the cause of biotechnology in Melaka, Malaysia and has been seen as a straight-talking, no nonsense figure in the fledging industry. Her detractors have noted her as being a thorn, but her steadfast determination and sacrifices have not been ignored. Prof. Farida Habib Shah is currently consultant advisor to the state, and is CEO of BioIT Technologies Sdn. Bhd., her own consultancy company aimed at developing biotechnology and Information and Communication Technology (ICT) startups. She is also a Fellow of the distinguished Third World Academy of Science, member of the Executive Board of Third World Organization for Women in Science as well as Honorary Professor of University Tunku Abdul Rahman, Kuala Lumpur. It is not hard to see why she is noted as a molecular scientist

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## FARIDA HABIB SHAH

### Setting the Stage for Bioentrepreneurship

By Mahaletchumy Arujanan and K. Cheng Liew



*Professor Farida (right most) mentors young scientists.*

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*“Crop biotech is one of the most important tools that can contribute towards increased productivity and enhanced food security.”*

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who packs a punch when it comes to single-handedly handling the state of biotechnology of Melaka. In fact, it was widely reported that the petite former director of Melaka Institute of Biotechnology was able to singly handle Malacca’s promotions at the BIO 2005 conference, where some 1,600 exhibitors tried to sell their products and services, and form collaborations in the sector.

Inspired from learning all about the great scientists who made life-changing discoveries during her school days, Prof. Farida allowed herself to be immersed in the inquisitiveness befitting a researcher. Such inquisitiveness has rubbed off on her demeanor in life, being willing and daring enough to question and learn about things around her. By learning and discovering its various facets in her search for scientific truth, she is now walking her talk by being both in the research and in the business of biotechnology, spearheading the growth of the country’s fledging industry.

She pulls no punches as well when it comes to naming the problems faced by the country in developing biotechnology. “We have strong potential if we (Malaysia) get our act together, and work on our strengths. What we’re seeing right now is a gap in the value chain towards commercialization which is not being addressed,” observes Prof. Farida. “Not many companies are interested in investing on commercializing research, even those that are almost ready for the market. How much more those that still need to undergo rigorous testing, field trials, and prototyping?”

Prof. Farida’s outrage is not unfounded, as she believes that science and technology (S&T) is the main engine of growth and development, particularly sustainable development. Currently and in the future as more discoveries are made, S&T will and can contribute to a better quality of life, particularly in developing countries. As the country is dragging its feet in addressing issues that impede industrial development, she suggests an integrated approach towards biotechnology, where industry also looks into providing opportunities for other sectors, like agriculture. One example would be in the field of nutraceuticals, where farmers are also provided with plants to grow which would be bought back for extraction and packaging. The Melaka Institute of Biotechnology has set up a pilot plant, with funding from MARA (Council of Trust for the Bumiputra).

### ***Harnessing Power of Crop Biotech***

The CEO points out that Malaysia has the advantage of its long history in agricultural research and does not lack in brains as well. But then, the lack of funding and support in terms of commercialization is draining the country of its cream of the crop to other more supportive and conducive environments like Singapore. “My view has always been that crop biotech is one of the most important tools that can contribute towards increased productivity and enhanced food security,” she comments. “The same applies to Malaysia where we are currently one of the main importers of food and not the exporter. In order to ensure enough food, the only way this can be done is by harnessing the power of crop biotechnology.”

“We need to seriously look at getting our research output to the market, and develop with our own intellectual findings as well, instead of solely looking at getting big companies. For it is only through developing our home labels can Malaysia grow in this aspect,” comments Prof. Farida, as she gave the example of the German government



Prof. Farida with research officers of the Melaka Biotechnology Institute.

setting offices dealing with such funding in its universities.

Prof. Farida is also professor of molecular biology, Faculty of Science and Technology, Universiti Kebangsaan Malaysia. As a strong proponent of biotechnology, her collaboration with Malaysian Biotechnology Information Center (MABIC) and The International Service for the Acquisition of Agri-biotech Applications (ISAAA) has been long-standing. She was elected as one of the MABIC's distinguished fellows. Sitting on the board, she has provided valuable insights from her range of experience with academia and the biotech industry.

#### ***Insights from International Workshop***

She has attended various workshops, seminars and events organized by MABIC. Among them, one of the most prominent would be an international workshop on *The Development of Agricultural Biotechnology in Islamic Countries: Sharing the Experience on Issues and Challenges* which was co-organized by MABIC together with Egypt Biotechnology Information Center (EBIC) and the

Inter-Islamic Network on Genetic Engineering and Biotechnology (INOGEb) at the Agricultural Genetic Engineering Research Institute (AGERI), Giza, Egypt.

“It is very inspiring to get a chance to see the various advances in Egypt in terms of agricultural biotechnology,” she comments. “The trip was an eye-opener in terms of what we could achieve in Malaysia. The enthusiasm and cooperation of the scientists in Egypt and support of the government show the great progress in store. It is trips like these that researchers like us get a boost in morale to be able to go even further in science.”

“MABIC has been supporting the Malaysian biotechnology industry by providing information and educating the various stakeholder groups involved,” she says. “I receive their monthly newsletter as well as the frequent updates in current biotech issues from ISAAA which helps me keep abreast of the advancements around the world. I hope that MABIC continues its good work and keep actively supporting our fledging industry.”

With regards to her future plans, she has been in talks with the Ministry of Entrepreneurship in setting up a bio-entrepreneur skills program aimed at providing training in terms of business setup and providing counsel towards those interested in setting up their own biotechnology company. Other projects with the Ministry include a pilot incubating program, and a commercialization program aimed at bridging the value chain gap.

“With more time in my hands, I might also want to work on the area of bioprospecting, from a molecular biology perspective as it has been a strong interest of mine since it was mentioned at a conference 10 years ago. Who knows what the future might bring?” □

# THE UPLB GENETICS AND CELL BIOLOGICAL SOCIETIES

## Sharing Biotech Information to Students

By Noel Amano Jr.

Studies suggest that the attitude of the general public towards scientific developments in general are closely associated with trust in sources of information (Cavanagh et al. 2005). With this line of thinking, a biotechnology component has been integrated to high school and university curricula in many countries, such as Australia, U.S. and Canada (Kitto et al., 2003). Improved understanding of biotechnology is expected to provide individuals with the capability to make informed decisions.

But this is not the case in developing countries, especially in Latin America, Africa and Asia (Fritz et al., 2003). Biotechnology awareness of high school students or university students majoring in non-biology fields remains limited. Several student organizations have bridged this gap. In the Philippines, the International Service for the Acquisition of Agri-biotech Applications (ISAAA) Southeast Asia Center and the Southeast Asian Regional Center for Graduate Study and Research in Agriculture Biotechnology Information Center (SEARCA BIC) collaborate with student organizations working to disseminate science-based information on biotechnology.

### *Genetics Society*

One such organization is the University of the Philippines Los Baños Genetics Society, or GeneSoc. The organization, which was established on December 20 1983, aims to share information on genetics, genomics and biotechnology. In the university, the GeneSoc has established interactive study groups that help students with their genetics courses and give non-biology students an idea what genetics as a



*GeneSoc uses ISAAA materials in their programs.*

science is. The organization also aims to distribute science-based information on biotechnology.

“Biotechnology is a touchy subject,” says Jickerson Lado, the organization’s Executive Committee head. “The biotechnology debate has been tainted with ideologies, emotions and issues far from the technology, such as politics and globalization. We have to deal with the facts. We need science-based information on the subject and GeneSoc aims to provide students and the lay public with fair, balanced and credible information.” Jickerson believes that ISAAA and SEARCA BIC play an

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important role in promoting public understanding of scientific advances in biotechnology. The Genetics Society has collaborated, on numerous occasions, with ISAAA and SEARCA BIC. The KC provides GeneSoc with educational materials which the organization uses in their programs.

“It is very important that everyone be reached by fair information. As students of an agricultural university, we have been exposed to the science of genetic engineering, its basis, applications, benefits and associated risks. But we have to think of those that have no idea what the science is, which I surmise is more than half of the country’s population,” notes Ryan Pascual, member of the organization. “My mother for instance has basically no idea what genetically modified foods are. Well, she obtains biotech information from the mass media, the number one source of information on biotechnology, we can’t deny that. But since the mass media tends to focus on sensational news stories, the public hears only part of the story.”

“That is why we have these projects to educate the lay people and spread science-based information on genomics, genetics and biotechnology,” says Gilmeri Mallorca, a GeneSoc member. Richard Casiguran, head of GeneSoc’s Project Committee, explains that the organization is currently focusing on educating high school students. “They will be the next generation of consumers. We are

anticipating that more biotechnology products will be available in the future. And we believe that the knowledge we share will help them make informed choices,” Casiguran adds.

“We organize seminars and conferences, where we discuss the pros and cons of the technology to high school students,” says Justin Revilleza, GeneSoc’s vice president. He acknowledges that some of these students will pursue other fields, such as engineering, commerce and social science. He also said that most of the high school students won’t have the chance to go to the university. “That is why we think it is important to reach and educate them,” Revilleza notes.

The GeneSoc conducts an annual program of seminars, conferences and contests highlighting the importance of genomics and biotechnology, which they call the Genetics Camp. Established in 2005, the Genetics Camp started with some 20 high school student participants. This year’s camp, with the theme *Superfoods: An Introduction to Biotechnology and Biofortification*, attracted more than 500 participants from over 30 high schools all over the country. Speakers from different research institutions discussed recent biotech advances such as RNA interference, iron and beta-carotene fortified sweet potatoes and Golden Rice.

Jickerson Lado explains that the Genetics Camp aims to spread information about biotechnology and the science of genetics in general. Lado says that “student participants seem interested enough about biotechnology, but when they think of the science, they usually think more of human cloning, mutant monsters, and longevity treatment. We aim to change that.”

“We distribute printed educational materials in GeneSoc-sponsored seminars and conferences. We find the ISAAA publications very useful, particularly the Pocket Ks,” recalls Ryan Pascual.



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“Pocket Ks are very nice publications, not too technical and easy enough for high school students to understand without losing the important aspects of the technologies featured.” From gene chips to expression vectors, marker genes and GURTs, biotechnology can look forbiddingly complex to high school and even college students. “Of course we won’t expect high school students to be that interested in science more so on biotechnology which most of them find intimidating,” explains Pascual. “We have to catch their attention. And we believe that the Pocket Ks do just that. They are easy enough to digest, with graphics and interesting pictures. And the wide coverage of topics, from biofuels to biopharmaceuticals and bioinformatics, is a big plus.”

“We also use the ISAAA videos in numerous occasions. We screened the video on the Bt Corn Experience in the Philippines in a recent conference,” recalls Gilmeri Mallorca. She believes that these videos will be the best way to reach other groups, for instance consumers, which GeneSoc plans to include in their future information campaigns.

The GeneSoc members also acknowledge the effectivity of the Crop Biotech Update in delivering new information on agricultural biotechnology. They say that the “easy to digest, bite-size format” of the newsletter is perfect for students who prefer reading a two-paragraph article summary rather than the complete technical research paper. Most

students are wired so the internet is the number one source of information. Ryan Pascual says that the Crop Biotech Update is very useful since it’s available for free. Pascual is a Plant Biology major in the University and he finds the update helpful in his studies. He explains that as much as he wants to read full scientific papers, he has no access to journals. Students from developing countries have limited access to scientific journals since most university libraries cannot afford journal subscription rates. Pascual says that the CBU is the next best thing.

### ***Cell Biological Society***

The UPLB Cell Biological Society, or the UP Cells, is another organization that collaborates with ISAAA and the SEARCA BIC in spreading credible information on agricultural biotechnology for the public, media and policy makers. For the past seven years, the organization has been active in holding activities to promote molecular biology and biotechnology not only to University students but also to students of other colleges and high schools and to the lay public in general. UP Cells has been involved in various civic academic activities, including the SIHAY Biology Congress. In addition to disseminating science-based biotech



*Members of the UPLB Cells demonstrate molecular biology protocols to high school students.*

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*“In addition to educating the students, we also share information with high school teachers. We believe that this is a way of creating greater impact. We provide them with educational materials.”*

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information, the congress aims to develop the academic potentials of today’s youth in the field of modern biology and biotechnology. The annual event includes activities such as trips to biotech research institutions and laboratory facilities, biotech research competition, seminars and workshops, and inter-high school biotechnology quiz contests. In addition to the Sihay Congress, the UP Cells also conducts an annual Cell Week. The event, which includes exhibits and workshops, are held to showcase the latest advances in the fields of biotechnology and molecular biology. Students from other universities are toured to laboratories in UPLB and are allowed to experience extraction of proteins and DNA and perform molecular biology protocols, such as polymerase chain reaction and cloning.

The first SIHAY congress, with the theme *Looking at Our Own: The Coconut Biotechnology*, was made possible by a collaboration with the SEARCA BIC. The conference attracted more than 300 participants from 32 schools in Luzon. For this year’s SIHAY Congress, the UP Cells highlighted the Global Status of Commercial Biotech Crops 2008 report.

“The Philippines is one of the top biotech-growing countries, although I bet that most of the students here in the University don’t know that. We are conducting this program mainly to educate the students,” says Rachelle Sy, president of the UP Cells. “In addition to educating the students, we also share information with high school teachers. We believe that this is a way of creating greater impact. We provide them with educational materials.” Sy notes that the ISAAA publications, particularly the information sheets, the Pocket Ks and the biotech booklets, have been a great tool in dispersing objective information on biotechnology. “These publications have been received very well, especially by high school teachers,” Sy adds. “They find the materials reader friendly. The facts are presented *sans* the intimidating details. We have been constantly receiving requests for these materials. I believe that the publications are being distributed to students.”

“Biotechnology, like any other new technology, is met with mixed reactions. Of course biotech is no silver bullet. We acknowledge that there are certain risks associated with the technology. That is why we need to communicate the facts. We believe that ISAAA, and particularly the SEARCA BIC, have done a great job in providing reliable information on a very controversial science,” Sy concludes. □

# BIOTECHNOLOGY COALITION OF THE PHILIPPINES

## Advancing Biotechnology through Partnerships

By Jenny Panopio and Rochella Lapitan

**C**apped with the mission of contributing to the national development goals of eradicating poverty, achieving food security, improving health and sustaining the environment, the Biotechnology Coalition of the Philippines (BCP) makes its way in advocating for the safe and responsible use of modern biotechnology in the Philippines.

BCP is a non-stock, non-profit membership association duly registered with the Philippine Securities and Exchange Commission. Launched in April 2001, it is a multi-sectoral coalition of biotech advocates from academe, farmers' organizations, industries, the church, media and the scientific community, which recognizes the potential benefits of modern biotechnology in improving lives of every Filipino.

### *From an Association to an Agri-biotech-Driven Coalition*

"The BCP is the expanded coalition of the Biotechnology Association of the Philippines, Incorporated (BAPI)", says its executive secretary Abraham "Abe" J. Manalo.

"BAPI aimed to develop a national framework to push for biotechnology in the Philippines. However, its membership and activities were mainly focused on pharmaceutical biotechnology. At that time, they realized that a big portion of the biotechnology industry in the Philippines was not the pharmaceutical industry, but rather the agriculture industry, primarily because the Philippines is an agricultural country. By then, series of institutional meetings with the public and private sectors were conducted to underscore the need to find niches of biotechnology in the

agriculture sector and to include its stakeholders in the association. Thus, the BCP was born and the rest is history," narrates Abe.

### *Ensuring Safety: Building the Capacity of Regulators*

In July 2001, Philippine President Gloria Macapagal-Arroyo made a declaration supporting the safe and responsible use of modern biotechnology and its products as one of the means to achieve food security, equal access to health services, a sustainable and safe environment, and industry development. As an offshoot of this pronouncement, the Department of Agriculture issued in 2002 Administrative Order No. 8 (DA AO8) which serves as the guideline for the importation and release into the environment of plants and plant products derived from the use of modern biotechnology.

Insect-resistant Bt corn passed through the scientific assessment based on DA AO8 prior to its



*Workshop for regulators on commercialization guidelines.*



*Media practitioners attend briefing on global status of crop biotechnology in a joint BCP and SEARCA BIC-sponsored seminar.*

commercialization in the Philippines in December of the same year. This biotech crop is the first food and feed crop approved for commercial adoption in Asia.

“In support of DA AO8, the Department of Agriculture (DA) Biotechnology Program Implementation Unit (DA PIU) together with several partners, including the International Service for the Acquisition of Agri-biotech Applications (ISAAA), BCP, and the Southeast Asian Regional Center for Graduate Study and Research in Agriculture Biotechnology Information Center (SEARCA BIC) developed the national capacity building program in biotechnology,” Abe recounts.

In early 2002, ISAAA together with the DA PIU and SEARCA BIC organized a training workshop on National Biosafety Frameworks and Implementation. The workshop was attended by regulators and would-be regulators from the National Biotechnology Program where they were

introduced into the methodology of risk assessment through hands on examination of regulatory dossiers based on food and environmental safety. In this event, the need for follow up in-depth training on the process evaluation of the safety of biotech products was identified.

“That workshop was a pioneering activity that paved the way for a series of risk assessment workshops for the levels of biotech regulators in the Philippines. This was followed by another key training workshop on food safety risk assessment with the experts from AGBIOS as the key resource persons,” says Abe.

The National Capability Building Program with the BCP as a key partner included interdisciplinary aspects in capacity enhancement of regulators, policy makers, scientific technical review panels, institutional biosafety committees, technology developers, and scientists who worked on the transfer, regulatory policies, commercialization and diffusion of biotechnologies.

“We at BCP were acknowledged for our efforts in conducting biotechnology risk assessment seminars for policy makers and regulators. This enabled them to make informed decisions in implementing the biotechnology regulatory framework,” says Abe.

***Road to Commercialization: Increasing Public Awareness on Agri-biotechnology***

Biotechnology communication is essential to promote deeper understanding of issues surrounding biotechnology. Development of communication strategies and use of different modalities contribute to awareness promotion and eventually, biotechnology acceptance in the country.

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Aside from the regulatory capacity building initiatives, BCP is also involved in organizing information, communication, and education (IEC) campaigns in grounding biotechnology in the Philippines especially during the height of protest of anti-biotech groups. The compelling alliance of the DA Biotechnology Program in partnership with SEARCA BIC, BCP, the DA National Agriculture and Food Council, the Philippine Council for Agriculture, Forestry, and Natural Resources Research and Development (PCARRD), and the scientists from the local universities, trail blazed the information drive on biotechnology and DA AO8. Several country-wide information activities were conducted to increase awareness and engender public acceptance on biotechnology.

"We simultaneously performed different communication mechanisms for target groups of stakeholders without duplicating efforts to strengthen the positive environment of biotechnology in the country. We worked as a network that paved the way for the formation of a multi-stakeholder umbrella of biotechnology agencies for a national biotechnology communication program," he shares.

Abe recognizes the concerted efforts of several players in biotechnology education and awareness campaigns. He looks at ISAAA as a credible source of information on biotechnology and provides opportunities for the coalition members to build their capacities on communicating biotechnology.



*Abraham Manalo, BCP executive secretary, calls for continuing exchange of ideas between the science community and the general public.*

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"We usually cite ISAAA and Dr. Clive James in our presentations as we use some of his data, especially in the articles that we develop in BCP," he says. "ISAAA-developed biotech communication materials are really effective and useful, particularly the Pocket Ks which are good references for professors and students. Likewise, the ISAAA videos such as 'Asia's First: The Bt Corn Story in the Philippines' is a great documentary of a success story in the Philippines," says Abe.

"It is also remarkable that BCP board members were empowered as participants and resource speakers in ISAAA and SEARCA BIC's biotechnology-related initiatives. Drs. Benigno Peczon, Nina Gloriani, and Saturnina Halos, and Edwin Paraluman are BCP board members invited by ISAAA and SEARCA BIC as resource persons and Filipino experts on biotechnology in local and internationally organized activities," he gladly says.

***A Glimpse of the Future: Big Leap for Biotechnology in the Philippines***

BCP shares the vision of Philippine progress through harnessing the potentials and opportunities provided by biotechnology. "There are many areas in agricultural research and development where the new tools of biotechnology could be useful, and that is where we'll find a niche for our country," he reiterates. Quoting Dr. Peczon's point of view, he asserts that "the archipelagic regions of the Philippines may be a good setting for production of pharmaceutical crops. In this way, our country may position itself in the global market niche on biopharming."

"Progress in biotechnology industry in the Philippines may not be far reaching since we have already established our regulatory system. Our transparent and stable regulatory system is a model for other developing countries. Moreover, we have a pool of experts that are spearheading the creation of more biotechnology opportunities in the country," he stresses.

However, the biotech coalition believes that the full potential of modern biotechnology can only be realized if the products of these technologies will be accessible and available to the adoptors of the technology, particularly the farmers sector.

"ISAAA should continue to facilitate farmers exchange programs to sustain information sharing and transfer of technologies among adoptors of crop biotechnology, especially in the developing

countries," says Abe. Likewise, he emphasizes the need to intensify more biotechnology information campaigns in regional levels where the local government is skeptical about the technology as well as in areas where emerging biotech crops will soon be planted.

Abe believes that continuing dynamic exchange of ideas from and within the science community and the general public must be sustained through continuing partnership – a condition for a big leap for crop biotechnology in the Philippines. □

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