

PHILIPPINES



MALAYSIA



INDONESIA



# Straight from the Scientists:

Biotech Experts' Perspectives and Experiences  
in Informing the Public



ISAAA  
INTERNATIONAL SERVICE  
FOR THE ACQUISITION  
OF AGRIBIOTECH  
APPLICATIONS



In the eyes of the public, academics and scientists are at the topmost level of the credibility ladder, being the most reliable and trusted sources of information on biotechnology. Their vast technical knowledge and being consumers as well make them seen as highly concerned about public health and safety issues, and capable of evaluating and managing benefits and risks.

Scientists deliver results of their research often through scientific conferences and scholarly journals. However, the messages in such formats are often difficult to understand by non-technical audiences. Thus, there is a strong need for popularized information on biotech to achieve greater public awareness, understanding, and engagement.

But the big question is: *Are scientists and professors fulfilling this role of communicating science to the public?* To know their stand on this task, how they play their part, and what they need to be better communicators, a survey of 217 biotech experts in Indonesia, Malaysia, and the Philippines was conducted online and onsite. This was implemented by ISAAA in cooperation with the Malaysian and Indonesian Biotechnology Information Centers (MABIC and IndoBIC).

The study provides a glimpse of the actual science communication situation in Southeast Asia based on the biotech experts' experiences and aspirations. Knowing where they stand and what they need would help concerned agencies to equip scientists and academics to be better science communicators. In the long run, this will enable the public to have clear and science-based information necessary for informed decisions on biotechnology.

# Scientists as Biotech Communicators



Some studies have shown how scientists fulfil their role in public engagement. The Royal Society of London commissioned a study in 2006<sup>1</sup> to investigate the factors involved in the science communication efforts of scientists and engineers. Results showed that 75 percent of the scientists and engineers surveyed had at least one public engagement activity in a year. Their main reason for engaging with the public was the need to educate them instead of encouraging dialogue. Because research activities took most of their time, they only had limited time for science communication. The top motivation for science communication efforts turned out to be more funding for their institution. The results of the study were forwarded to funding organizations, universities, and other research institutions to develop a workable system of rewards for scientists who engage with the public.

An internet survey in Australia in 2011 by Serle<sup>2</sup> revealed that scientists who communicate with the public have positive judgment about themselves, their communication skills, and their work. Many scientists value engagements with individuals who are interested in their work because

of how it makes them feel about themselves and their work. It was also consistent with other studies confirming that many scientists, and in particular, women, applied scientists, younger scientists and those who choose to work in the public sector, are motivated to become scientists by their desire to contribute to the public good. Such aspirations cannot be ignored as they strike at the very heart of why many people choose to become, and remain, scientists.

Most of the Australian scientists rarely communicated with the public about their work (at least once a year) because it was not part of their job. When asked about the help they need to communicate the way they want, the top

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<sup>1</sup> The Royal Society. *Survey of Factors Affecting Science Communication by Scientists and Engineers*. London: The Royal Society (2006). <http://royalsociety.org/Content.aspx?id=5232>.

<sup>2</sup> Suzette Dawn Serle. *Scientists' Communication with the General Public: An Australian Survey*. [PhD Thesis] Australia: The Australian National University (2011). 445p. [https://digitalcollections.anu.edu.au/bitstream/1885/8973/4/02whole\\_Searle.pdf](https://digitalcollections.anu.edu.au/bitstream/1885/8973/4/02whole_Searle.pdf)



answers were: time for communication, opportunities to communicate, and training to communicate science.

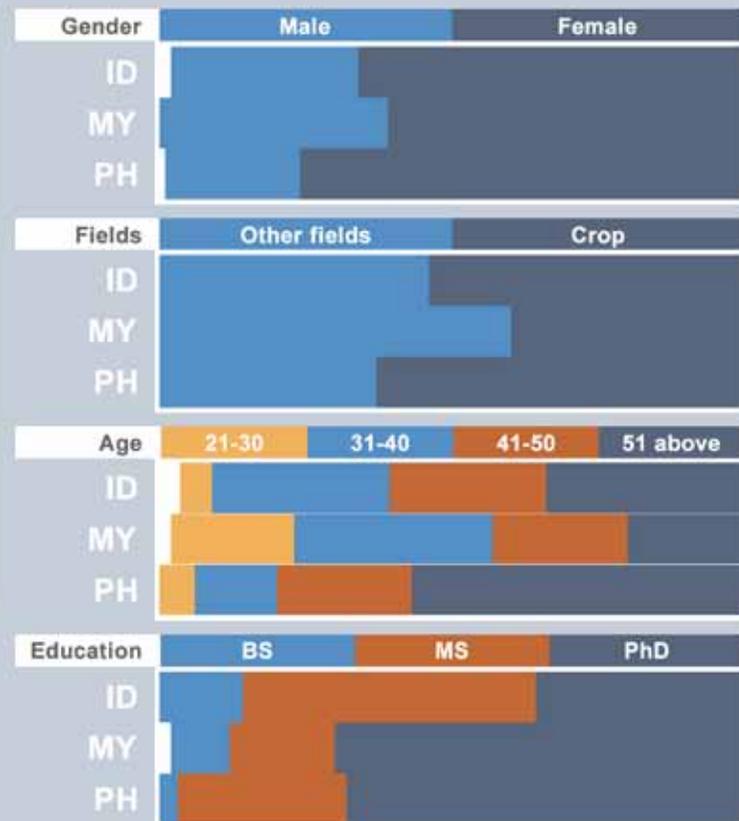
The background cultures and worldviews on science communication of Filipino and American researchers were compared in a study conducted in 2011 by Ponce de Leon<sup>3</sup>. It turned out that Filipino scientists want the public to believe in the stability of scientific facts though they acknowledge that facts could change. American researchers, on the contrary, acknowledged their limitations as researchers and that certain facts could still change. Both groups believed that scientific knowledge is highly important and it is every individual's responsibility to get the right information from credible sources such as the experts.

These studies indicate that science communication benefits the public and the researchers in different aspects. There are no available literature on how scientists and academics perform science communication activities in Southeast Asia, thus, ISAAA conducted the study *Academics and Scientists as Biotech Communicators: Perspectives, Capabilities, and*

*Challenges in Southeast Asia*. The results could be used in forming guidelines for concerned institutions to foster a favorable environment for science communication in developing countries, particularly in the region.



# Academics and Scientists in the Philippines, Malaysia, and Indonesia



Two hundred seventeen (217) university instructors/professors and public sector scientists/researchers from 63 institutions represented the biotech experts in Southeast Asia for the study. It is limited to individuals with at least 5 years of experience in biotechnology. Majority of them (71%) were involved in teaching and research while 29 percent were into pure research.

**Age.** Respondents from the Philippines and Indonesia were mostly 51 years old or older. This indicates that they were born on or before 1962 and they belong to the Boomers generation (1946-1964). Boomers are known to be adaptive and flexible and so they easily embrace new technologies such as biotechnology. On the other hand, majority of the experts from Malaysia were 31 to 40 years old.

**Gender.** Majority (70%) of the biotech experts in the three countries were females, indicating the feminization of the biotech field. High proportion of women was also reported in the Philippine biotechnology experts directory published in 1997.<sup>4</sup>

**Education.** Most of the Filipino and Malaysian experts have attained doctorate degrees, while majority of Indonesian experts have masteral degrees. The experts' attainment of graduate studies indicate that the biotech experts are highly educated in their field.

**Field of expertise.** Over half of the respondents (60%) focus on crop biotechnology. Others were involved in livestock, marine, medical, food, and industrial fields.

Scientists perform science communication activities because they feel that their research becomes irrelevant when not communicated to the public.

<sup>4</sup> Philippine Council for Advanced Science and Technology and National Institute of Molecular Biology and Biotechnology. 1997. Philippine Biotechnology Experts/Researchers.

# Percentage of time per task



**11%**  
SciCom



**49%**  
Research



**16%**  
Administration



**27%**  
Teaching



**13%**  
Other Tasks

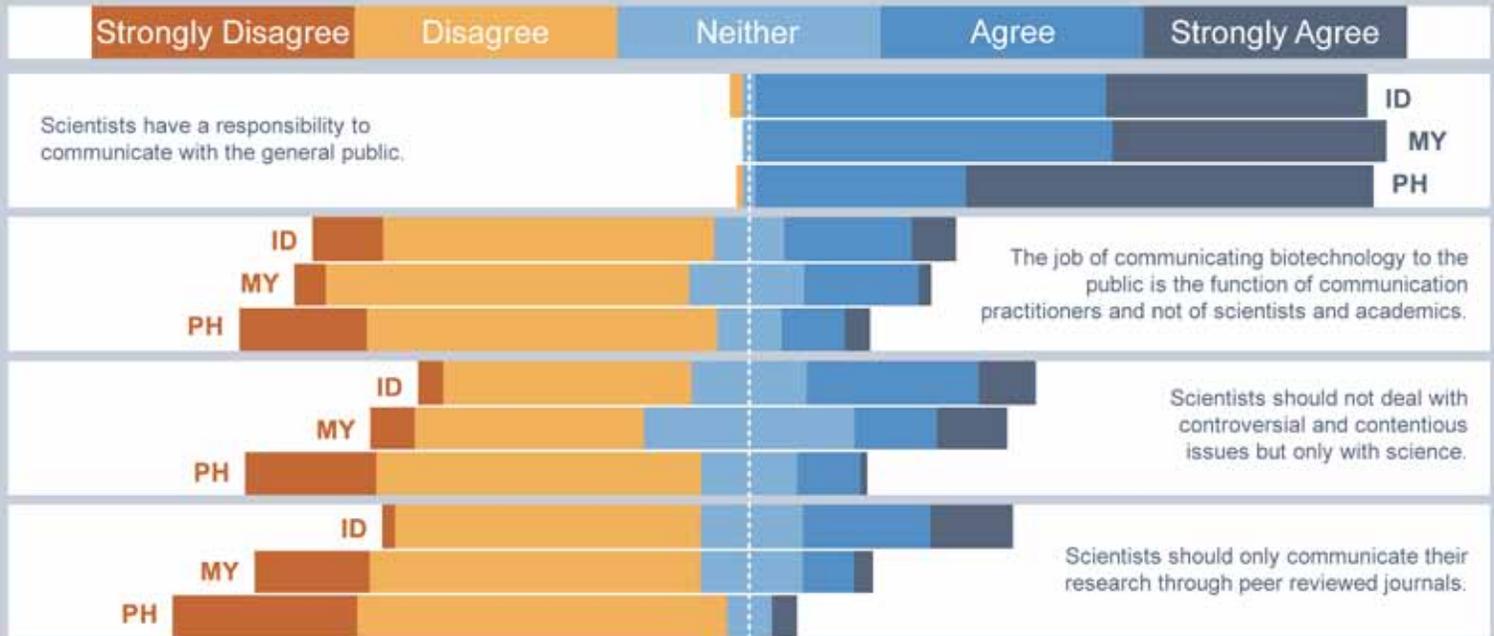
## Time for science communication

The biotech experts were asked to estimate by percentage the amount of time they devote to major activities such as teaching, research, administration, and science communication. Ninety percent (90%) had science communication activities but only an average of 11 percent of their time were devoted for such tasks.

Consistent in the three countries, the biotech experts give most of their time for research activities. According to a science communication meta-analysis report by De Semir<sup>5</sup>, conduct of science communication activities is usually not part of the job requirements of scientists. However, some scientists perform science communication activities because they feel that their research becomes irrelevant when not communicated to the public.



# Biotech experts' views on science communication



## Views on science communication

Ten common perceptions on science communication were presented to the experts to obtain their opinion using the following scores: strongly agree, agree, neutral, disagree, and strongly disagree.

Most of the respondents from the Philippines strongly agree that scientists have the responsibility to communicate with the general public. About half of the respondents from Malaysia and Indonesia also agree with the statement. Moreover, majority disagree with the statements that communicating science is the role of communication practitioners only; scientists should not deal with controversial issues; and scientists should only communicate their research through scholarly journals. These results indicate that scientists and academics acknowledge their duty to inform the public about science.

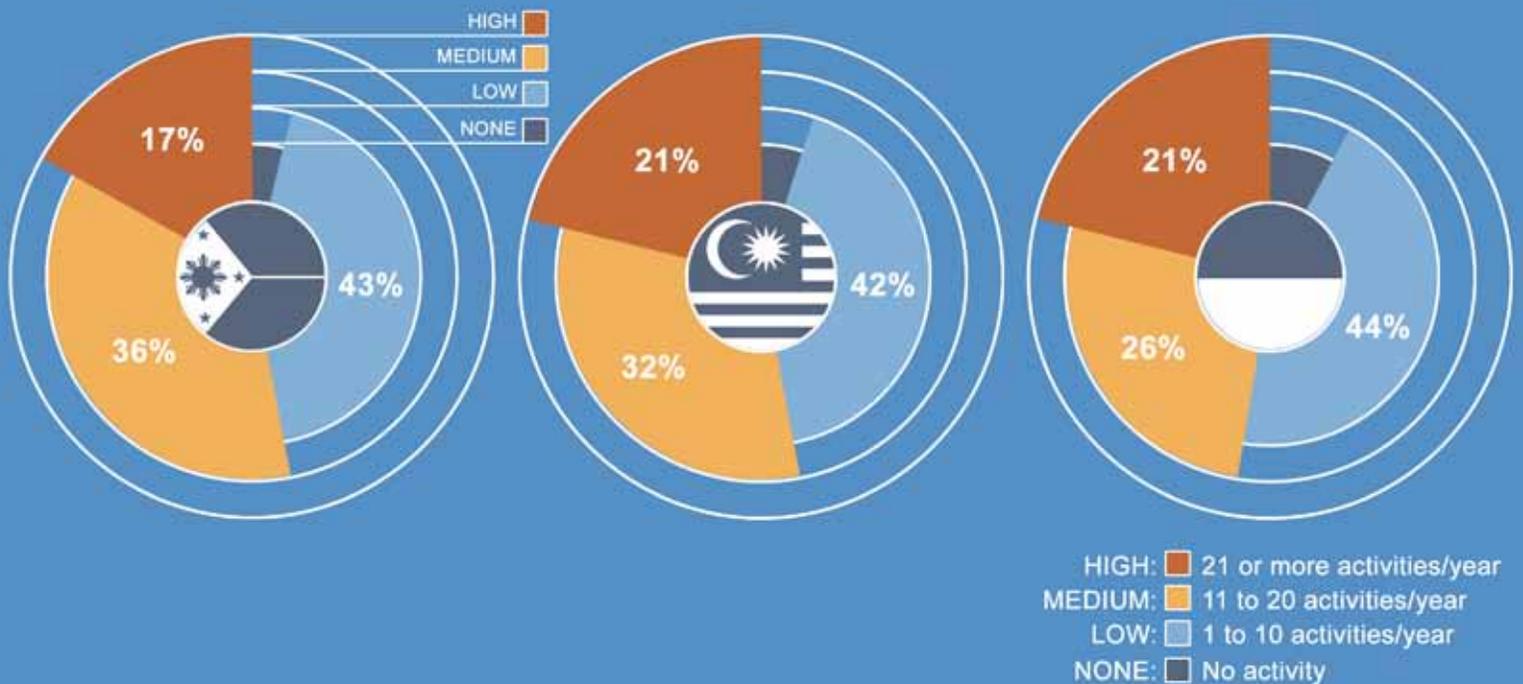
Advantages of engaging in science communication were also rated positively. Most of them agree that such activities help them advance their career and give them personal satisfaction. Majority also strongly agree that science communication encourages networking.

Thus, science communication goes beyond mere public engagement but is also beneficial for the biotech experts' personal and professional growth.

Experts from the Philippines and Malaysia disagree with the statement that they have no more time for science communication. Thus, even if they have indicated that they devote a small portion of their time for science communication, they were willing to give more time for such activities. However, the Malaysian respondents agree that they have no more time for the task. Majority of the scientists and academics from all countries agree that with proper training and opportunities, they are willing to do science communication activities.

**Scientists and academics acknowledge their duty to inform the public about science.**

# Biotech experts' level of engagement



## Science communication activities

Ninety percent (90%) of the biotech experts said that they have been involved in at least one science communication activity during the immediate year of the study. This is also the same percentage of respondents who devote a portion of their time for science communication asked in another part of the survey questionnaire.

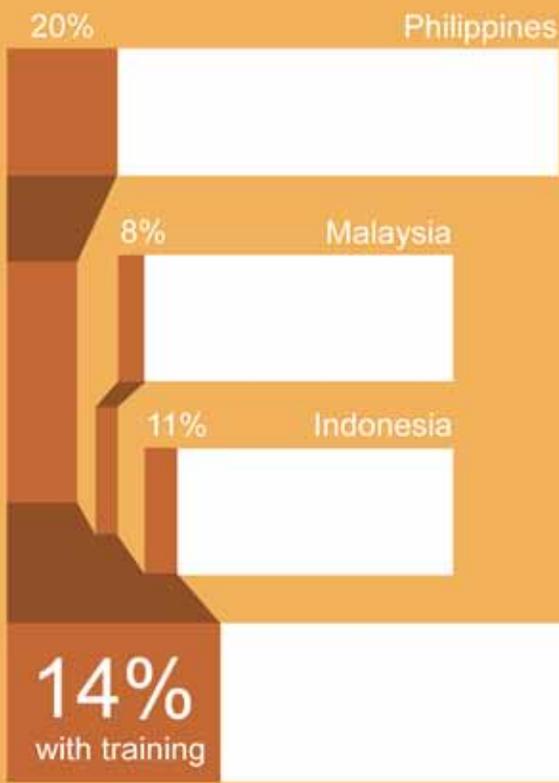
**Level of engagement.** Three levels of public engagement activity emerged: low (1 to 10 activities/year), moderate (11 to 20 activities/year), and high (21 or more activities/year). Almost half of the experts from the three countries had low level of engagement.

**Types of activities.** The main science communication activities performed by the biotech experts were face-to-face discourses with different audiences. These include engagement with farmers, field visit, and as resource speaker for general audiences. Through direct interactions, biotech experts are able to stimulate dialogue about the topic. Only a few reported that they have been interviewed for television or responded to inquiries through e-mail, letter, or telephone.

**Audience.** The primary audiences of biotech experts in their engagements were students and staff from other institutions. Farmers, private sector representatives, and policy makers were among the secondary audiences of the experts.

**Topic.** Consistent in the three countries, the main topic of engagement was usually about the biotech experts' research. Basic biotechnology and current and potential applications of the technology were ranked at the second and third most important topics of engagement, respectively.

**Reasons.** The top reason why experts perform science communication activities is to help the public understand biotechnology. Fostering public acceptance and explaining issues are the secondary reasons for engagement.



## Biotech experts' attendance to scicom trainings

### Improvement of Science Communication Skills

Improving skills in communicating science requires active learning and practice. One of the ways to do this is to attend trainings on science communication which are usually facilitated by communication experts.

The study revealed that only 10 percent of the biotech experts have attended at least one training on science communication. In the Philippines, 20 percent participated in trainings such as risk communication workshop for insect resistant eggplant; dealing with media; and enhancing biotech knowledge and communication skills for regulators. Most of these trainings were initiated by organizations including Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), ISAAA, Program for Biosafety Systems (PBS), and Agricultural Biotechnology Support Project II (ABSPII). Academic institutions, a scientific organization, and a private company also conducted a few trainings that were attended by some of the respondents.

Among the Indonesian experts, only 11% have experienced participating in science communication training. All the trainings indicated were sponsored by organizations such as ABSPII and PBS.

About 8% of the Malaysian biotech experts have attended science communication training. The trainings were organized by government institutions and the academe.

These results show that only a small number of biotech professionals have attended formal training on improving their science communication skills. This may imply that most of them lack appropriate skills in conducting their outreach activities.



## Moving Forward in Communicating Biotechnology

To further investigate how to improve science communication among experts, their motivations, needs, and recommendations were also collected. According to the scientists and instructors, more funds, incentives, and training will definitely motivate them to conduct more science communication activities.

Lesser loads in research and teaching would certainly motivate 29 percent of the respondents. Furthermore, some also indicated that encouragement from superiors may also motivate them. Studies have shown that when the institution values public engagement, it leads to positive views about science communication, improved willingness to engage, and increase in actual engagements.

The biotech experts' primary needs to improve their science communication skills is more training, particularly in popularizing technical concepts. They also recommended conduct of regular fora on science communication to enhance science communication tools among experts. Biotech updates, time, and funds were also mentioned among others.

## Perception of Biotech Acceptance

Most of the biotech experts (73%) perceive that biotechnology is already accepted in their countries. For the Filipino experts, the increasing adoption of biotech corn is a strong evidence of acceptance of the technology. In Malaysia, the rising number of students taking up biotechnology courses signify a positive view of the technology. The Indonesian experts think that the technology is accepted in their country because the farmers have already expressed their willingness to adopt upon commercialization of biotech crops.

## Conclusion

The Philippines began planting biotech corn in 2003. In 2013, a total of 795,000 hectares of land have been

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# Biotech experts' perceptions of biotech acceptance



planted with biotech corn and farmers are gaining increases in their yields and also in their income. Indonesia is in the advanced stage of testing biotech sugarcane which is expected to be commercialized in the near future. In Malaysia, scientists are testing genetically engineered mosquitoes to suppress the population and hinder the spread of mosquito-borne diseases.

With the current status of biotech in these countries, and the rest of Southeast Asia, it is important that all stakeholders are equipped with science-based information on the technology. Scientists and academics, being at the front lines of research, must fulfil their role in reaching out to the public, and they must be supported and empowered in doing such a mission.

Trainings on different aspects of science communication must be available for biotech experts to enhance their skills and confidence in communicating biotechnology. Science communication can also be integrated in the curriculum of science courses. These efforts could lead to building biotech champions, who will serve as bearers of fact-based information of biotechnology and its benefits.

Research institutions involved in biotechnology could likewise provide value on science communication

initiatives by giving points for promotion, awards, and/or incentives for biotech researchers who are inclined to conduct public engagement. There should also be active search for funding sources from organizations that support public understanding of science.

A community of biotech experts could be formed for the advancement of science communication. Through sharing of information and experiences on science communication in regular assemblies, the group could develop their skills and naturally evolve together with improved skills and mindset. Scientific organizations could integrate science communication in their mandate to encourage public engagement.

Informing the public is an implied duty of scientists and academics, and getting the accurate information is the right of the public. Biotech experts should strive to go beyond “informing” and encourage engagement or participation in the dialogue. They should ensure that the message they convey is framed and delivered in a language that could be understood by the public and connected to their values, thus bringing them together to a common ground. When biotechnology is not communicated well, all the efforts of scientists may all be in vain.



## **Straight from the Scientists: Biotech Experts' Perspectives and Experiences in Informing the Public**

Source:

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