

From Frankenfood to Light of Hope

17 Years of Agri-biotech Reporting in the
Philippines (2000-2016)





The media works as a vital reservoir of images, stories, and definitions that the public use to understand issues. Thus, how media portrays topics such as science and technology affects public understanding as well as policy development. Studies have also shown that in the Philippines, the main source of information on biotechnology is the mass media. Analyzing how media frames biotechnology stories is important to help understand the current discourses on biotechnology in the country, as well as how to improve the implementation of biotech communication initiatives to widen public understanding of this beneficial field of science.

A 17-year (2000-2016) study was conducted to see the trends in media reporting in print and online on agricultural biotechnology. The first 10 years (2000–2009) was initially published in 2011 covering the development and commercialization of biotech corn in the country as reported in print by the top three national dailies, *Manila Bulletin*, *Philippine Daily Inquirer*, and *Philippine Star*. The following seven years (2010–2016) was published in 2017, covering the recent happenings in the Philippine biotechnology arena such as the research and development of biotech food crops, Bt eggplant (pest resistant eggplant) and Golden Rice (Vitamin A-enriched rice). Aside from the top three newspapers, articles published by *Business Mirror* were also included in the study because of its significant increase in the number of articles on agricultural biotechnology. Online articles from the four newspapers were also included in the study to get more holistic understanding of biotechnology discussion in the country. The articles were classified and analyzed according to type, topic, tone, focus, sources, media frames, and use of metaphors.

Philippine Media Reporting on Agri-Biotechnology



With the advent of the Internet and social media, it was a question if newspapers are here to stay in the Philippines. This challenge of new technologies turned out to be an opportunity for newspapers to reach large number and more types of audiences, and cultivate more discussions on important issues, especially through various social media platforms.

Media coverage

From 2000 to 2016, 2,219 articles on biotechnology were published in print and online by four major Philippine newspapers, *Manila Bulletin*, *Philippine Star*, *Philippine Daily Inquirer*, and *Business Mirror*. For the first ten years covered in the study (2000–2009), the significant occurrences reported were about the research and development of Bt corn leading to its commercialization in 2002 and the planting years which started in 2003 (Fig. 1). From 2010 to 2016, the majority of the coverage on agri-biotechnology shifted to the research and development of Bt eggplant and Golden Rice, which gained significant public interest. A court case filed by environmental groups in 2012 against Bt eggplant further added more stories in the media reportage of biotech crops in the Philippines.





Fig. 1: Key biotech events & number of articles on biotechnology released in major Philippine newspapers (2000-2016)

Manila Bulletin published the most number of articles, especially in the first study period (2000–2009) (Fig. 2). In the recent seven years (2010–2016), *Business Mirror* outscored *Manila Bulletin*. All newspapers have dedicated pages in agriculture, science and technology, and business, but *Business Mirror* exhibited better layout than the others with accompanying images and figures, which was more attractive for more readers. Most of the articles tackled local stories and perspectives on biotechnology.

Section placement

Articles on biotechnology had the highest chance to be published in the main section of *Manila Bulletin* together with the headlines, where 36% of their articles on biotechnology appeared in this part of the printed newspaper (Fig 3). In the last seven years (2010–2016), *Philippine Daily Inquirer* gave front page treatment to two articles, which were about the Court of Appeals issuance of a ruling to stop Bt eggplant field testing (2013) and the Supreme Court’s reversal of ruling on Bt eggplant (2016). Similar stories also appeared on the front page of *Philippine Star* in 2016 with the titles, “UP students

slam SC on Bt talong” and “SC reverses ruling on Bt talong tests.” Articles on biotechnology did not appear in the front page of *Business Mirror* but such articles were prominently featured in the Agriculture/Commodities section.

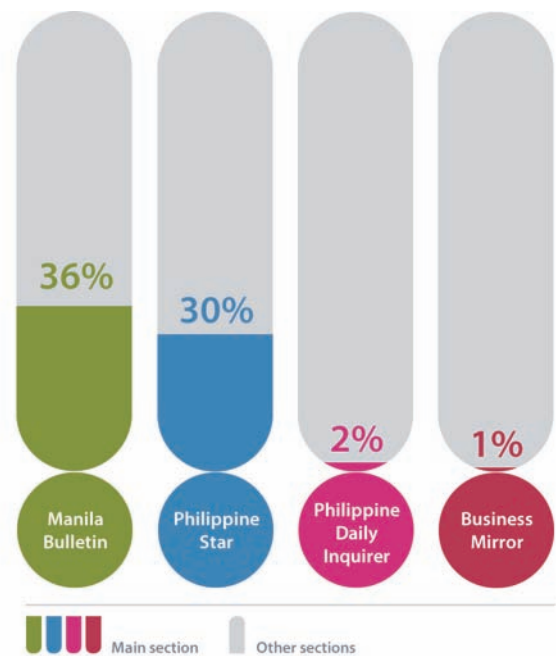


Fig. 3: Percentage of articles published in different sections of major Philippine newspapers (2010–2016)



Fig. 2: Number of articles published by major Philippine newspapers (2000-2016)

Writers

The number of writers covering agri-biotechnology increased through the years. Six writers who contributed a significant number of stories in their respective newspapers have attended several media workshops conducted by organizations with biotechnology initiatives. Most of them have also received awards in the annual biotech journalism contest organized by Jose Burgos Media Services, Inc. and other organizations. Attendance to workshops, interaction with scientists, and recognition could have contributed to the increase in writers covering biotechnology.

Defining biotechnology

Out of the 2,219 articles published in 17 years, only 30 articles or 1% defined biotechnology. This may show that the writers assume that readers already understand the concept of biotechnology. Almost half (47%) of the 30 articles used popularized definitions, which explained the technology using simplified terms. Another 47% used a more technical definition, using scientific terms such as recombinant DNA technology and gene splicing. The remaining 6% used negative words to define biotechnology such as “dangerous”, and “creating disorders such as autoimmune disease, allergies, asthma, gastrointestinal disorders, infertility, and organ damage.”

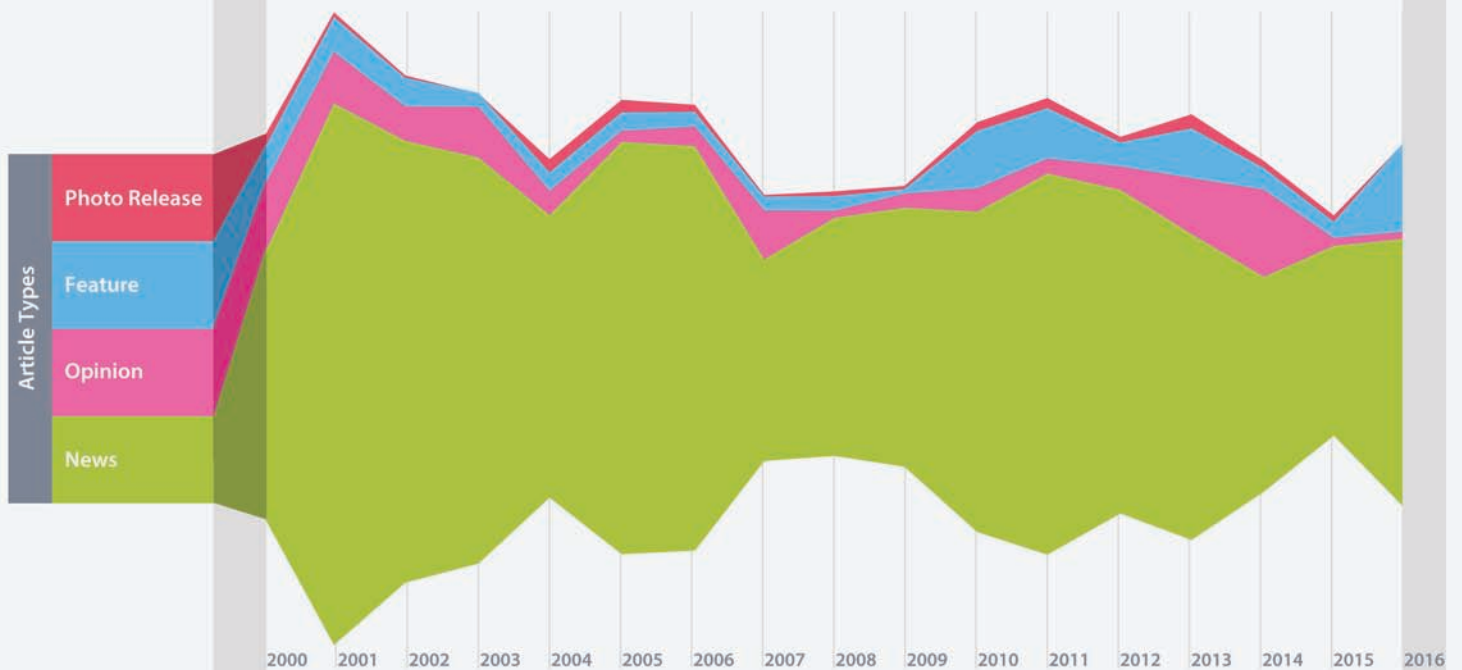


Fig. 4: Number of articles on biotechnology by article type (2000-2016)

Article Types

Most of the articles were in news format (79%), while there were less feature (9%) and opinion pieces (9%). *Philippine Star* articles were predominantly news articles (83%) (Fig. 4). A significant number of opinion articles (27%) were published by *Philippine Daily Inquirer*, which were written by regular columnists who were consistent with their point of view on the technology. In the initial study period (2000–2009), 20 opinion articles were published by *Philippine Daily Inquirer* in negative tone towards biotechnology. Most of the feature articles (13%) were released by *Business Mirror*, which exhibited a more in-depth analysis of issues and concerns.

Articles by Tone

The number of positive articles increased from 41% in 2000–2009 to 59% in 2010–2016 (Fig. 5). *Manila Bulletin* and *Philippine Star* published more positive articles in particular. The number of positive articles published in *Philippine Daily Inquirer* barely changed from 31% in the first study period to 35% in the recent study. *Business*

Mirror also showed a positive outlook on biotechnology as shown by 54% of their articles, while 23% were neutral in tone, covering events on biotechnology as they unfold. The tone of the articles may be linked to the newspapers' marketing stance. For instance, *Manila Bulletin* has a marketing tagline of "There's good news here," while *Philippine Daily Inquirer* is known for their "Balanced news, fearless views." The positive articles focused mostly on the benefits of the technology and the support from the government and the scientists, while negative articles usually tackled environmental and health issues on biotech crops.

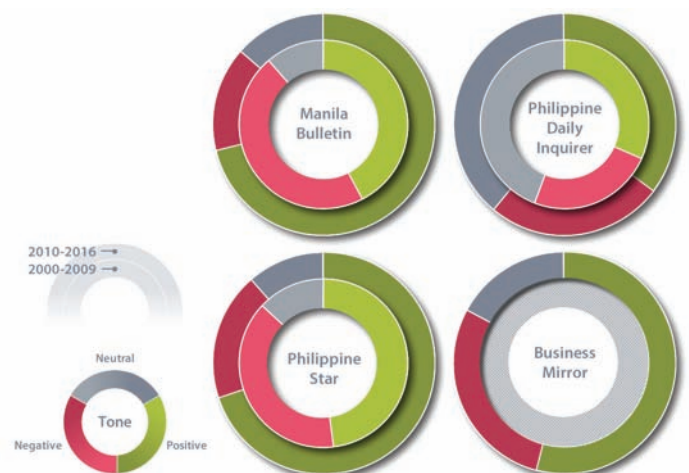


Fig. 5: Tone distribution of articles on biotechnology (2010–2016)

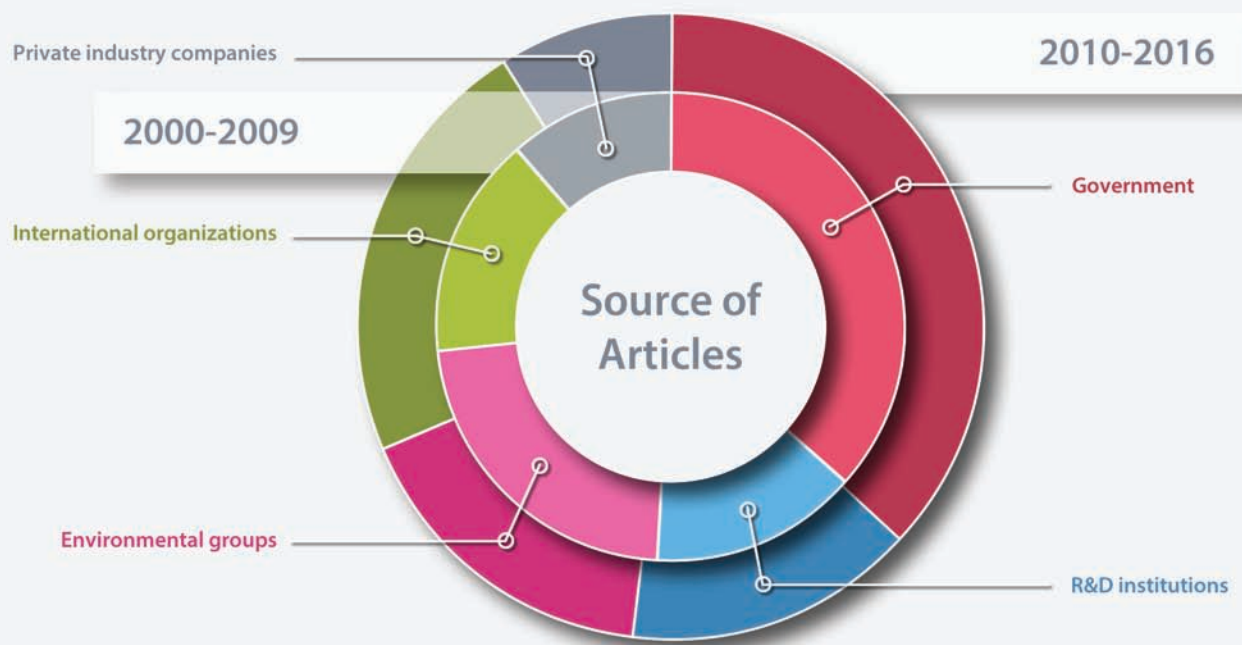


Fig. 6: Sources cited in articles on biotechnology (2000–2009 and 2010–2016)

Sources of Articles

Writers often solicit information from various sources to add flavor to their stories. These “voices” play significant roles in how stories are framed. For the past 17 years (2000-2016), government officials have been the primary source of information in the articles on biotechnology (Fig. 6). In the first ten years (2000–2009), government was followed by civil society groups and international organizations/agencies as sources of information. In the second part of the study (2010–2016), government sources were followed by international organizations and civil society or environmental groups. Among the four newspapers, only *Philippine Daily Inquirer* cited civil society groups more than the government officials. Most of the information released by government representatives was in positive or neutral tone, stating facts about biotech issues.

In 2010–2016, the most quoted sources were Dr. Clive James, Founder and Emeritus Chair of ISAAA who also authored annual reports on global biotech crop adoption. Next were Daniel Ocampo, who used to be a Greenpeace campaigner; Proceso Alcala, the Department of Agriculture (DA) Secretary from 2010–2016; and Dr. Antonio Alfonso, a rice scientist and Director of the DA Biotechnology Program Office from 2013 to 2015. Through the years, use of “authoritative voices” such as scientists and government officials became more prominent than quoting statements of biotechnology critics.

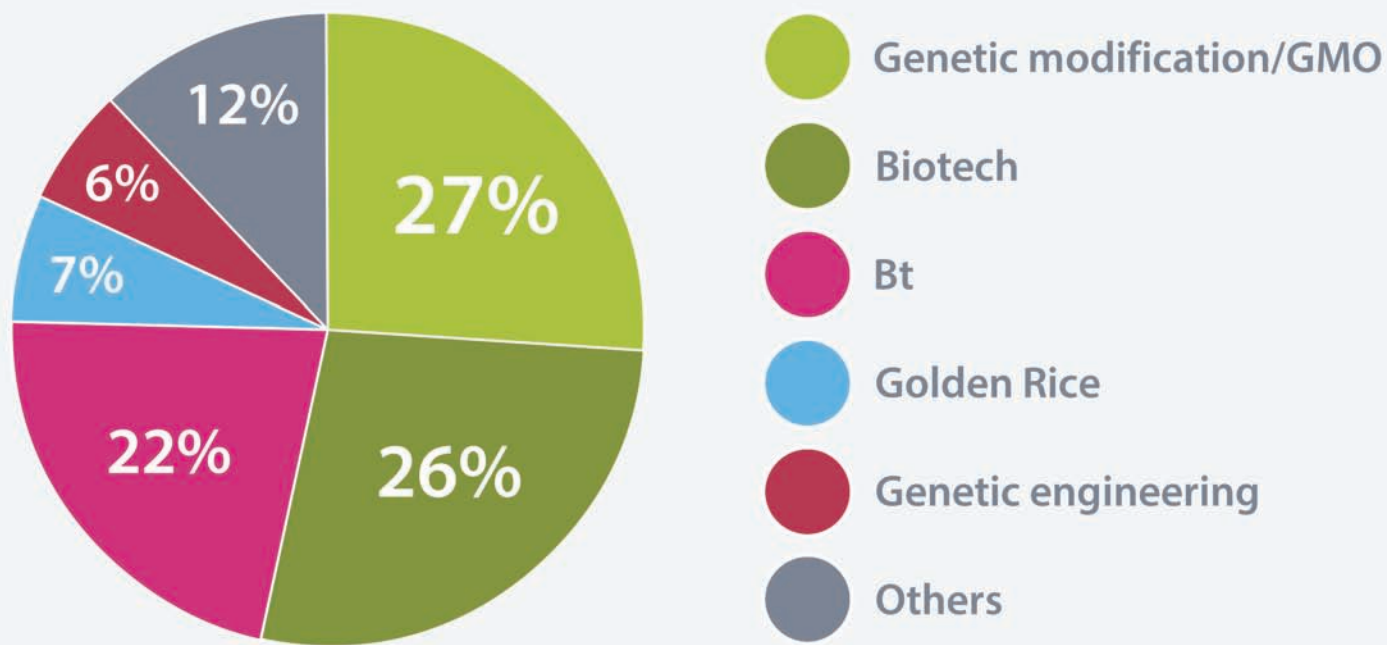


Fig. 7: Keywords used in articles on biotechnology (2010–2016)

Article Topics

In the first ten years of the study (2000–2009), the main topics covered were what biotechnology is and the events that led to the eventual commercial release of Bt corn in the Philippines. Seven years later, the spotlight was turned to Bt eggplant, which was discussed in 26% of the total number of articles. Other topics discussed by several articles include adoption, benefits, and research & development of various biotech crops.

Keywords in articles

Keywords indicate focus or interest, especially in online articles which may have applied search engine optimization (SEO). In the first part of the study (2000–2009), the prominent keywords used to refer to the technology were genetic modification/GMO, biotechnology, genetically engineered, genetically-altered, and genetically-improved. After seven years, the main keywords in the articles were genetic modification/GMO, biotech, and Bt, referring to Bt insect resistance technology (Fig. 7).

Table 1: A framing typology for articles on biotechnology

FRAME	CONTEXT
Social Progress/Economic Development	Improving quality of life and harmony with nature; Local/global competitiveness
Morality/Ethics	Identification with values that determine what is right or wrong, acceptable or unacceptable
Scientific Validity	A matter of expert understanding what is known versus unknown; calls on the authority of sound science or peer-review
Public Accountability/Governance	Research in the public good or responsible use or abuse of science in decision-making
New Research	Discovery announcement, new scientific application
Conflict/Strategy	Who's ahead or behind in debate; battle of personalities
Public Engagement	Focus on poll results, reporting of public opinion statistics, public sentiments, personal testimony of farmer or consumer
Others	Context not included in frames above

Source: Liakopoulos, 2002

Message frames

A frame is a device used to package complex issues in persuasive ways by focusing on certain interpretations. It implies what is deemed as important to an issue and the degree of attention an issue receives.

The study used the message framing categories developed by Liakopoulos (2002) as shown in Table 1.

Based on the article counts, the dominant frame changed from public accountability/governance (2000–2009) to social progress (2010–2017). The articles released in the first ten years focused on government support to biotechnology, regulations on commercial release, labelling, and government's point of view on the claims of the biotech critics. In the succeeding years (2010–2016), the writers gave attention to the benefits accrued by the farmers in planting Bt corn, which further led to increasing the agricultural competitiveness of the country.

Statistical tests showed that in 2010–2016, the *Business Mirror* articles under the new research frame was significantly higher than the articles in *Philippine Star*.

This could be attributed to the low number of articles covering research and development of biotech crops in the *Philippine Star*. *Business Mirror* also had significantly higher number of articles under the conflict/strategy frame than *Philippine Star* and *Manila Bulletin*, but not with *Philippine Daily Inquirer*. This could be because *Business Mirror* utilized the most number of sources with conflicting views, followed by *Philippine Daily Inquirer*. Furthermore, *Business Mirror* has significantly higher number of articles using public engagement frame than *Philippine Star* and *Philippine Daily Inquirer*. *Business Mirror* gave special attention to the voices of farmers by citing their statements on biotechnology in the articles.

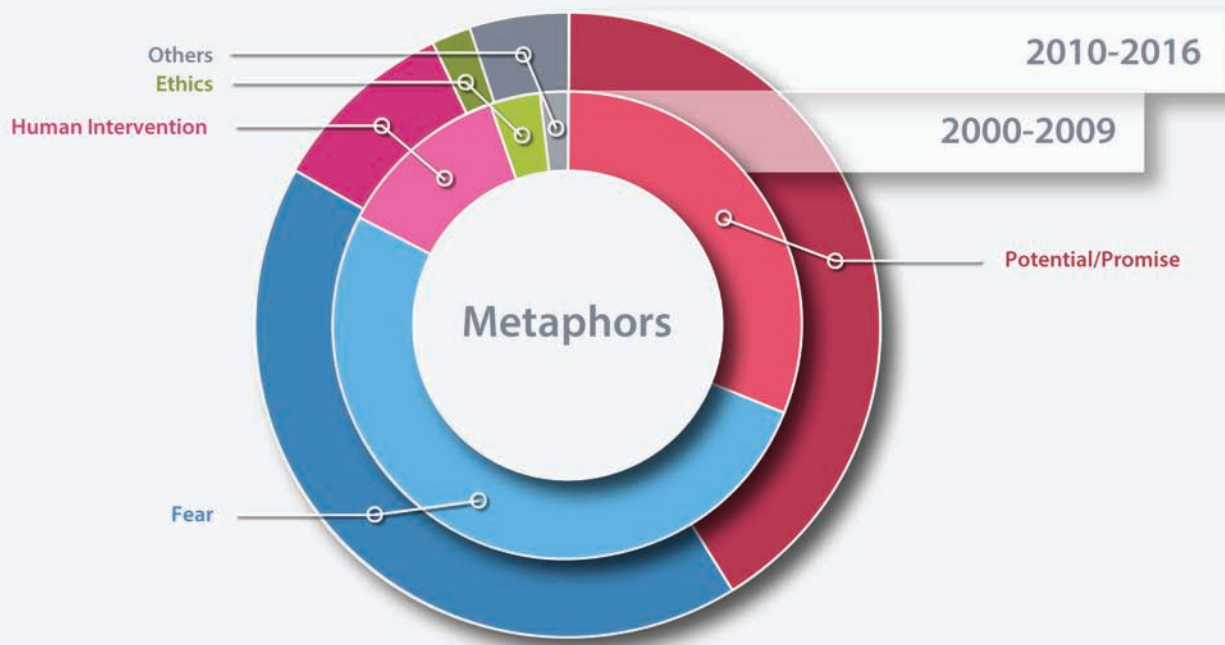


Fig. 8: Metaphor domains used in articles on biotechnology (2000–2009 and 2010–2016)

Metaphors

The articles were sorted according to metaphor categories: potential or promise, fear, ethics, human intervention, and others. In the initial 10 years (2000–2009), most of the metaphors used landed in the fear category through mention of inaccurate negative effects of the technology (cancer, homosexuality, physical deformities, and mental retardation) and allusions to scary creatures or objects (Frankenfood, monster, poison, and bomb) (Fig. 8). Over time, the use of fear appeal declined and shifted to the use of metaphors that depict potential/promise. In 2010–2016, biotechnology and biotech crops were described as “new hope”, “answer to farmers’ dreams”, “salvation of the cotton industry”, and “light of hope”.

Conclusions



The 17-year Philippine media coverage on biotechnology showed a mature editorial position of the popular newspapers, which went through a process that took place gradually over time. The number of articles in the initial ten years (2000–2009) was high but reporting was sometimes inaccurate probably because there was no tangible product in the first years and the technology was fairly new in the country. Sensationalism and speculations were decreased after the first biotech crop was commercially released in 2002. An increasing effort to present science-based information became more evident in the succeeding years. Significant events such as Bt eggplant development and the case on field trial sparked the interest among writers to report about biotechnology.

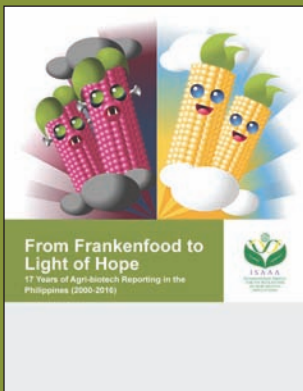
The efforts of the government and private sector organizations to provide media trainings on biotechnology had an impact on coverage. This was observed in the reporting behaviors of writers who consistently write about biotechnology issues over the years.

Though biotechnology was consistently reported in the newspapers, it cannot be as dominant as the coverage of politics and environment. These topics are still of highest interest among the public, and thus the newspapers, which are business enterprises, must yield to the interest of most customers. Nevertheless, media practitioners and scientists must continue to collaborate to sustain the coverage and interest on biotechnology. With the increasing use of social media, a new breed of information seekers and producers has the potential to amplify and revolutionize the discourses on biotechnology not just in the Philippines, but in other countries.

Acknowledgments

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Tome, Kristine Grace N., Mariechel J. Navarro, Sophia M. Mercado, and Maria Monina Cecilia A. Villena. Seventeen Years of Media Reportage of Biotechnology in the Philippines. *Philippine Journal of Crop Science* xx(xx): xx-xx.

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