

The Political Economy of Golden Rice in the Philippines: Deconstructing the Stakeholders' Narratives¹

SHIMABARA Kazumi

*Master's Graduate from the Graduate School of Economics,
Kyoto University, Japan*

ABSTRACT

This study examines the construction of narratives and power relationships among stakeholders in a sociopolitical arena through the case of Golden Rice. Golden Rice is a genetically engineered crop, biofortified with beta-carotene (the precursor to Vitamin A) with the humanitarian objective to reduce Vitamin A deficiency (VAD). It is a controversial topic among genetically modified organism (GMO) enthusiasts and opponents because of its humanitarian goal to feed the poor (“pro-poor biotechnology”). Biotechnological innovations to produce beneficial crops cannot be divorced from the skepticism and criticism that have surfaced. The Philippines has been distinguished for its suitability to the crop. With the recent emergence of international safety approvals for Golden Rice, the question of its commercialization in the Philippines is gaining momentum. Existing literature has predominantly analyzed technical aspects but has not adequately addressed the discourses within the debate: pro-Golden Rice (defined as the hegemony), contra-Golden Rice (defined as the counter-hegemony), and more so, those in the middle-ground. This study aims to shed new light by deconstructing stakeholder narratives, using critical discourse analysis (CDA) to contribute an enhanced understanding on the creation, dissemination, and modification of the surrounding discourses affecting the behaviors toward Golden Rice in the Philippines.

Keywords: critical discourse analysis (CDA), genetically modified (GM) crops, Golden Rice, the Philippines

JEL Classification Codes: P16, Q18, Z1

Corresponding author: Graduate School of Economics, Kyoto University, Yoshida-honmachi, Sakyo-ku, Kyoto 606- 8501, Japan. E-mail: k.shimabara130@gmail.com

1 This study is based on my Master's thesis titled “The Political Economy of Golden Rice in the Philippines” submitted to the Graduate School of Economics in July 2019, which was awarded “Best Dissertation”.

1. Introduction

Golden Rice, otherwise known as GR2E², is internationally renowned by natural scientists as a new technology with the humanitarian purpose of feeding the poor and eventually the world. Golden Rice is a genetically engineered³ biotechnology rice crop that has been biofortified⁴ with beta-carotene, a precursor of Vitamin A. However, it has been marred with controversy by the anti-GMO (genetically modified organisms) groups because of its pro-poor biotechnology purpose. It was created to solve Vitamin A deficiency (VAD), one of the main nutritional deficiencies prevalent in developing countries. Considering the crucial need to solve VAD, the International Rice Research Institute (IRRI), headquartered in the Philippines, licensed this new rice crop variety in 2001. Together with the Philippine Rice Research Institute (PhilRice), they proposed commercializing Golden Rice in the Philippines to solve the VAD among citizens suffering from this public health problem.

This study was inspired by the significant progress of Golden Rice in the Philippines from 2017 to mid-2019 and the sudden safety approvals by the international regulatory bodies of Food Standards Australia New Zealand (FSANZ), Health Canada, and the United States Food and Drug Administration (US FDA). Furthermore, as of July, 2019, 103 genetically modified (GM) crop events are approved in the Philippines (International Service for the Acquisition of Agri-biotech Applications [ISAAA] 2019). This number alone provokes an image that GM crops seem to be welcomed and accepted by the regulatory bodies in the Philippines. Conversely, this may also depict underlying problems with the regulatory governmental body of the Philippines. Nevertheless, with Golden Rice being put in the spotlight as the potential trailblazer for genetically engineered biofortified crops, could this also mean that Golden Rice will be approved and commercialized nationwide in the near future? This study explores the relationships between the key stakeholders' surrounding the discussion of the potential commercialization of Golden Rice.

2 GR2E is the technical term for Golden Rice. It is the current genetically modified rice event variety/line.

3 Genetically modified (GM) foods are derived from organisms whose genetic material (DNA) has been modified in a way that does not occur naturally, e.g., by introducing a gene from a different organism. The technology is often called "modern biotechnology" or "gene technology," sometimes also "recombinant DNA technology" or "genetic engineering" (WHO, 2020).

4 Biofortification is the process by which the nutritional quality of food crops is improved through agronomic practices, conventional plant breeding, or modern biotechnology. Biofortification differs from conventional fortification in growth rather than through manual means during processing of the crops. Biofortification may, therefore, present a way to reach populations where supplementation and conventional fortification activities may be difficult to implement and/or limited (WHO, 2019).

1.1. Purpose and significance of the study

This study reveals discursive strategies and the power held by the stakeholders, using critical discourse analysis (CDA) within the debate of the potential commercialization of Golden Rice in the Philippines. This study deconstructs the narratives employed by the stakeholders by answering the following question: What are the influencing strategies that stakeholders use and how do they use these strategies to persuade the general public to either accept or refuse the potential commercialization of Golden Rice? By analyzing the cases wherein stakeholders' power can conceal truths in a certain discourse, one may learn how the stakeholders frame their narrative for their own benefit. Conversely, the discourse can permeate through and act as a leverage to involve stakeholders' power. The issue of Golden Rice is emblematic of this discourse and power relationship. From this holistic perspective, it is of importance to discern the interaction between the key players since power relations are embedded within the sociopolitical context.

The significance of this study conveys a better understanding of the reasoning behind what the key stakeholders employ in the acceptance or refusal of Golden Rice. This study was conducted under the assumption that there are two main conflicting discourses, namely, pro-Golden Rice and contra-Golden Rice that have been constructed surrounding the idea of Golden Rice's pending commercialization. The literature on Golden Rice, particularly the ones that focus on the Philippines tend to be more technical and do not explain the whole situation of the Golden Rice debate. This study hopes to fill this gap and provide a clearer picture of the ongoing debates from the key stakeholders in its social, political, and economic context.

1.2. Limitations of the study

This study tends to disregard explorations of one of the main discourses, constructed by the general consumer, but this is because there are few discussions and opinions from consumers themselves on what they think about the topic due to a lack of knowledge, especially because Golden Rice is not commercially available yet. Nevertheless, Golden Rice must be understood through the exploration of the competing discourses. The goal was not to identify the valid discourse, rather to explain the current situation of Golden Rice in the Philippines and the discursive strategies presented by the stakeholders. There is no need to analyze and discuss which of the stakeholders' discourses are true and which ones are false. Instead, there is a need to understand the ways in which the discourses are constructed and how certain truths and concealed motivations can pervade through.

2. Literature review

The following review of the literature⁵ on Golden Rice presents a clearer contextual understanding within the Philippines, laying the foundations from where the research question of this study gains inspiration. The literature will be reviewed by highlighting whether Golden Rice and its pending commercialization in the Philippines is accepted, and The literature will be reviewed by highlighting whether Golden Rice and its pending commercialization in the Philippines is accepted, and to understand the stakeholders' current opinions.

Dubock (2019) along with Potrykus (2012), firmly suggests that the decision to not adopt Golden Rice and for critics to demand for stricter regulations can be considered a crime against millions of VAD sufferers. However, as proponents of Golden Rice, they are highly biased in the positive way that they discuss the rice crop. Zimmerman and Qaim (2004), despite initially being critical on Golden Rice, ultimately echoed the proponent's current definition of Golden Rice as an alternative to solve VAD rather than being *the* solution to VAD, which the proponents have advertised Golden Rice as on their website. Wesseler et al. (2014) and Wesseler and Zilberman (2014, 2017) are also in favor of Golden Rice, but instead base their opinions on economic aspects and the prospects that Golden Rice will improve food security⁶, demand, and overall livelihood. The reviewed literature highlighted food security as the goal of GMOs or Golden Rice. However, this is merely used to solicit well-intended ideas to invite the public to act upon. As such, they were mostly in favor of Golden Rice. The authors of the literature idyllically painted the benefits to society and why it should be accepted and commercialized to help the populations who need it most with little to no discussion about any risks that they foresee. Their focus was more on the potential economic benefits of this biotechnological innovation, disregarding the sociopolitical context, which limited their discussions in explaining the whole picture of the Golden Rice debate. Furthermore, social and nutritional aspects that differentiate Golden Rice from regular GMOs were excluded; therefore, generalizations made on GMOs cannot be simply applied to the same context of Golden Rice.

Conversely, Chong (2003) placed the understanding of Golden Rice through the analysis of trust; he determined that there had been problems of local knowledge on Golden Rice as the literature presented by the proponents and the NGOs is mainly targeted to the elite or better educated citizens. Nevertheless, Chong (2003) holds a positive and optimistic view on Golden Rice as a promising future, as his findings showed that there was no mention of NGOs among the local village leaders and that their trust laid more on the proponents of Golden Rice and the government. However,

5 Literature that discussed purely technical and scientific aspects of Golden Rice at length was not included in this literature review.

6 Food security exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 2002).

with his literature publication dating back to more than ten years ago, the Golden Rice discourse has met significant changes over the years. Furthermore, Moghissi et al. (2016) attempted to identify the claims made as to why individuals may agree or oppose to Golden Rice, albeit from a more technical aspect. Eventually, they summarized that the community as a whole should rely on science to see whether Golden Rice should be approved or disapproved. Meanwhile, Aerni and Bernauer (2006), although analyzing general GMO debates in the Philippines, determined stakeholder attitudes to GMOs via the use of questionnaires. From this, they could recognize the reasoning behind the trust among different stakeholders. The main takeaway is that public trust should be considered as a private but nontradeable good that can be manipulated by the proponents of Golden Rice and by those opposing Golden Rice. How public trust is understood through the stakeholders' methods may affect the perspectives on Golden Rice. Similarly, Stone and Glover (2017) analyzed deeper into the aspect of embedding, disembedding, and re-embedding the Golden Rice discourse in the Philippines, especially in the context that it holds. They were more critical about Golden Rice because of their analysis on the discursive purpose and power that the rice crops itself hold when engaging in the political sphere inside or outside the Philippines. For Kimura (2013), she reinterpreted hidden hunger (i.e., micronutrient deficiencies) by first explaining its history with the concepts of biofortification and fortification as well as its European roots. She argued that advances and successes in Golden Rice may reflect the attempt to fuse together the political layers and relationships between the Global North and the Global South that may have drifted apart through post-colonialism. It lies upon the discourse and the representations that Golden Rice have actively created or held on their moral politics of the country. Lastly, Kettenburg et al. (2018) observed the polarized debate on Golden Rice; however, limited himself to the study of sustainability science. Through cluster analysis and the use of framing, Kettenburg et al. (2018) were able to determine why the debates on Golden Rice have become so polarized and that there is a need to reconnect the debates by understanding the interpretations found through framing.

Alternatively, the literature is a worthy approach that creates a better understanding of the context of stakeholder attitudes toward Golden Rice. First, literature on Golden Rice by scholars who are not employed by either the proponents or the anti-Golden Rice groups, that used the Philippines as a case study, were very limited in terms of availability and accessibility. Despite the attempts to comprehend stakeholders' attitudes to Golden Rice through framing and discourse within its political context, minimal attention has been afforded on the interpretation and strategies carried out by stakeholders through the narratives and discourses that they use. Thus, this study departs from the understanding of Golden Rice through health, safety, and regulations, and instead endeavors into a more *critical* discourse analysis and framing that has been suggested mainly by Aerni and Bernauer (2006), Kimura (2013), Stone and Glover (2017), and Kettenburg et al. (2018), who were able to make relevant attempts at it. In this respect, this study contributes a new perspective to approach Golden Rice, using CDA.

3. Historical background and socioeconomic context

This section considers the historical background and timeline of Golden Rice in the Philippines since its introduction and situates this study into the sociopolitical context of the Philippines. Table 1 illustrates the timeline of Golden Rice's main events with a brief description in the Philippines.

Table 1: Timeline of the main events surrounding Golden Rice in the Philippines from 2006 to 2019

Date	Event	Details	Outcomes
2006–present	New Golden Rice materials produced by Syngenta (GR2 ⁷) transferred to the International Rice Research Institute (IRRI)	Confined field tests conducted in IRRI Los Baños and PhilRice Nueva Ecija under conditions approved by the Department of Science and Technology (DOST)	DOST-BC (Biotech Core Team) has issued a Certificate of a Confined Test for GR2E Rice that the Philippine Rice Research Institute (PhilRice) is using to support its Multi-location Field Trials (MLT) application to the Department of Agriculture–Bureau of Plant Industry (DA-BPI)
2012–2013	Results from MLTs of GR2R ⁸ shows that beta-carotene levels were attained but average yield was lower when compared to local varieties preferred by farmers		Decision to use GR2E variety to further develop Golden Rice
October 2014–July 2017	Confined field tests of GR2E conducted at IRRI and PhilRice to assess agronomic performance of GR2E	<ul style="list-style-type: none"> • No unintended effects of GR2E on agronomic performance, yield, and grain quality. • No difference for pest and disease reactions 	
February 22, 2017	Food Standards Australia New Zealand (FSANZ) safety approval for Golden Rice	<ul style="list-style-type: none"> • GR2E not intended for commercialization in Australia and New Zealand • Approval based on possibility of GR2E inadvertently entering other food supply rice grains 	Inclusion of GR2E into the FSANZ Code
February 28, 2017	PhilRice and endorsers of Institutional Biosafety Committee members apply for biosafety permit for field trial	<p>Objective:</p> <ol style="list-style-type: none"> 1. Collect relevant data to complete environmental risk assessment 2. Collect samples of GR2E and control rice grains 	

7 Technical term for the second and advanced version of Golden Rice improved from the GR1 rice variety/line.

8 Technical term for the most advanced version of Golden Rice in 2014 which has been replaced with the GR2E variety/line.

Date	Event	Details	Outcomes
March 1, 2017	PhilRice and IRRI submitted GR2E Rice application for direct use of food and feed, or for processing to the BPI under the DOST-DA-DENR-DOH- DILG JDC No. 1 Series of 2016 ⁹	The assessors: STRP, BPI-PPSSD, BAI ¹⁰ concurred that GR2E Rice is as safe for human food and animal feed as its conventional counterpart (published July 26, 2017)	DOH: GR2E will not pose any significant risk and that hazards, if any, could be managed by the department SEC ¹¹ expert recommended for the issuance of the biosafety permit Beta-carotene in GR2E is 7.31 ug/g Average Filipino consumes 290 g of rice per day
March 16, 2018	Health Canada safety approval for Golden Rice		
May 24, 2018	The United States Food and Drug Administration (US FDA) safety approval for Golden Rice		IRRI/PhilRice state nutrient claim on the American diet and not the average Filipino diet
July 19, 2018	Bureau of Plant Industry (BPI) called for GR2E public consultations by PhilRice/IRRI	Barangay captains, farmers, nutrition workers, member of the local council, and anti-GMO groups attended the public consultations	PhilRice/IRRI: <ul style="list-style-type: none"> • Confined field test data shows that Golden Rice meets target qualities • Reiterates that it is a <i>complementary</i> solution to existing Vitamin A deficiency interventions • Decision to plant and eat Golden Rice still lies with farmers and consumers • Research and development (R&D) will include socioeconomic issues: Golden Rice will be competitively priced vs. regular rice for affordability • Golden Rice is an <i>option</i>*
September 27, 2018	PhilRice received all required endorsements and resolutions made by local government units (LGUs) from the public consultations		
February 13, 2019	IRRI and DA renew their scientific and technical partnership	Prioritize rice and rice-based research and development projects	
February 14, 2019	Enactment of Republic Act. No. 11203 Rice Tariffication Law	Remove import limits on rice and provide an annual subsidy of 10 million Philippine pesos to develop the rice industry	Assumed to lead to the food security by controlling inflation and decreasing the retail price of rice in the market

Golden Rice cannot be divorced from the political sphere that it is involved in, and thus, cannot be fully understood without first understanding the context of the political, economic, and social aspects of the Philippines.

9 Refers to the Department of Science and Technology (DOST), Department of Agriculture (DA), Department of Environment and Natural Resources (DENR), Department of Health (DOH), Department of Interior and Local Government (DILG) Joint Department Circular (JDC).

10 Refers to the Scientific and Technical Review Panel (STRP), Bureau of Plant Industry-Plant Products Safety Services Division (BPI-PPSSD), and the Bureau of Animal Industry (BAI).

11 Refers to the Socio-economic, Ethical, and Cultural (SEC) expert.

* IRRI/PhilRice: Golden Rice is not the answer, but has the potential as an important complement to the current strategies in the fight against Vitamin A deficiency (VAD).

3.1. The institutional framework of the Philippines

The main political body present in this discussion is the Department of Agriculture (DA). It is the authority over food and agriculture in the Philippines and is one of the executive departments of the Republic of the Philippines. They are responsible for “the promotion of agricultural development by providing the policy framework, public investments, and support services needed for domestic and export-oriented business enterprises” (Department of Agriculture and Fisheries, n.d.). Additionally, PhilRice is also a government corporate entity that is attached to the DA.

Described below are the relevant bureaus and executive departments associated with the potential commercialization of Golden Rice.

Bureau of Plant Industry (BPI):

- Plant Products Safety Services Division (BPI-PPSSD)
- Scientific and Technical Review Panel (STRP) that comprises of “at least three reputable and independent scientists who shall not be employees of the Department and who have relevant professional background necessary to evaluate the potential risks of the proposed activity to human health and the environment based on available scientific and technical information” (Department of Agriculture–Bureau of Plant Industry [DA-BPI], 2007)

Executive departments:

- Department of Science and Technology (DOST)
- Department of Environment and Natural Resources (DENR)
- Department of Health (DOH)
- Department of the Interior and Local Government (DILG)

Together they create the DOST-DA-DENR-DOH-DILG Joint Department Circular (JDC)¹². In the case of Golden Rice, applications are to be submitted to the BPI who serves as the authority under which the application is first examined and assessed by the JDC. They collectively form the national regulatory body that oversees the applications for Golden Rice by PhilRice and IRRI. It depicts that the PhilRice and IRRI are government entities, given their relationship to the DA.

¹² Serves as the *Rules and Regulations for the Research and Development, Handling and Use, Transboundary Movement, Release into the Environment and Management of Genetically-modified Plant and Plant Products Derived from the Use of Modern Biotechnology*. Their evaluations are guided by the Executive Order No.514, series of 2006 on “Establishing the National Biosafety Framework, Prescribing Guidelines for its Implementation, Strengthening the National Committee on Biosafety of the Philippines, and for other Purposes” (DILG, 2016).

3.2. Organic Agriculture Act 2010¹³

This act declares the policy of the State to promote, propagate, further develop, and implement the practice of organic agriculture in the Philippines. Accordingly, organic agriculture “includes all agricultural systems that promote the ecologically sound, socially acceptable, economically viable and technically feasible production of food and fibers” (Congress of the Philippines, 2010). Moreover, it is declared that the broad definition of biotechnology mentioned in the terms for the act “shall not include genetically modified organisms or GMOs” but may include other technical components that are used for organic agriculture (Congress of the Philippines, 2010).

Special attention should be made to Section 31: Repealing Clause, which states that “all laws, presidential decrees, executive order, presidential proclamations, rules and regulations or parts thereof contrary to or inconsistent with this Act are hereby repealed or modified accordingly” (Congress of the Philippines, 2010). Therefore, there is a question of legitimacy in the enactment of this Organic Agriculture Act of 2010 when it serves the opposite purpose to the regulatory process and promotion of biotechnology by the DA. Thus, it is ironic that the Philippines can promote both organic agriculture and biotechnology at the same time according to their Republic Acts. The repealing clause should mean that if biotechnology with GMOs is pursued, the Organic Agriculture Law should be deemed ineffective and vice versa. There is an inherent conflict of interest by the government in how to approach biotechnology and organic agriculture.

4. Theoretical framework and methodology

4.1. Introduction to critical discourse analysis

Before focusing on CDA, the concept of discourse is briefly explained. Discourse is multidimensional. There is a plethora of discourse definitions but for this study it has been defined as:

“Discourse is ways of constituting knowledge, together with the social practices, forms of subjectivity and power relations which inhere in such knowledges and relations between them. Discourses are more than ways of thinking and producing meaning” (Weedon, 1987, p. 108).

Discourse analysis is a method for analyzing language patterns (written or spoken) within the social, political, and cultural context in which they occur. From this, one can see how language presents different views or understandings in the way it is interpreted by the individual—how one knows the world.

¹³ The Republic Act No. 10068 “providing for the development and promotion of organic agriculture in the Philippines and for other purposes” (Congress of the Philippines, 2010).

Discourses vary and have significant effects in defining how individuals or stakeholders create their subjectivity.

The concept of CDA used is described below:

“CDA is a type of discourse analytical research that primarily studies the way social power abuse, dominance, and inequality are enacted, reproduced, and resisted by text and talk in the social and political context” (Van Dijk, 2004, p. 352).

CDA is a macro-level approach that binds together language, power, knowledge, and ideology. It consists of knowledge. Knowledge is power; therefore, discourse is power. Unlike discourse analysis, CDA takes analysis a step further by having the ability to show “connections and causes which are hidden; it also implies intervention” (Fairclough, 1992, p. 9). By using CDA, this study interprets socially produced meanings by deconstructing taken-for-granted assumptions and strategies used to normalize one’s thinking.

The discussion of discourse analysis relays the intrinsic aspect of intertextuality¹⁴. Intertextuality can either reproduce or act as a challenge to the established status quo—the hegemony (explained below). The strategies used by stakeholders to communicate their position and persuade the public to either accept or refuse Golden Rice act as a perfect arena for discourse analysis. Discourse is never neutral; it has value and is ideology-laden. Discursive practices “do not just describe things, they do things” (Potter and Wetherell, 1987, p. 6). In terms of subjectivity, one needs to remember that discourses are dynamic and are constantly changing over time. Evidently, since the topic of Golden Rice entails the sociopolitical context attached to it, CDA is the best option to analyze and decipher these layers.

4.1.1. Concept of the hegemony

CDA also holds importance as a stream of social theory. According to Gramsci (1971), the hegemony, otherwise known as the dominant social class, can use their discourse in its superstructure as a *manufacture of consent*. The hegemonic actors in the Philippines are those who hold and exercise power and authority, usually by the dominant social class. Stakeholders are identified according to the way they exercise either hegemonic strategies or counter-hegemonic tactics outlined by Gramsci (1971). The hegemony naturalizes unequal power relations and demonstrates their ideas into people’s common-sense (Wodak, 2001). The discourse that they use to permeate through the individuals of society can help them justify their own power and ideology to create what should be accepted as true and the norm. Fairclough (1989, 1992) claims that hegemonic or dominant actors exercise their power through

¹⁴ “How texts can transform prior texts and restructure existing conventions (genres, discourses) to generate new ones” (Fairclough, 1992).

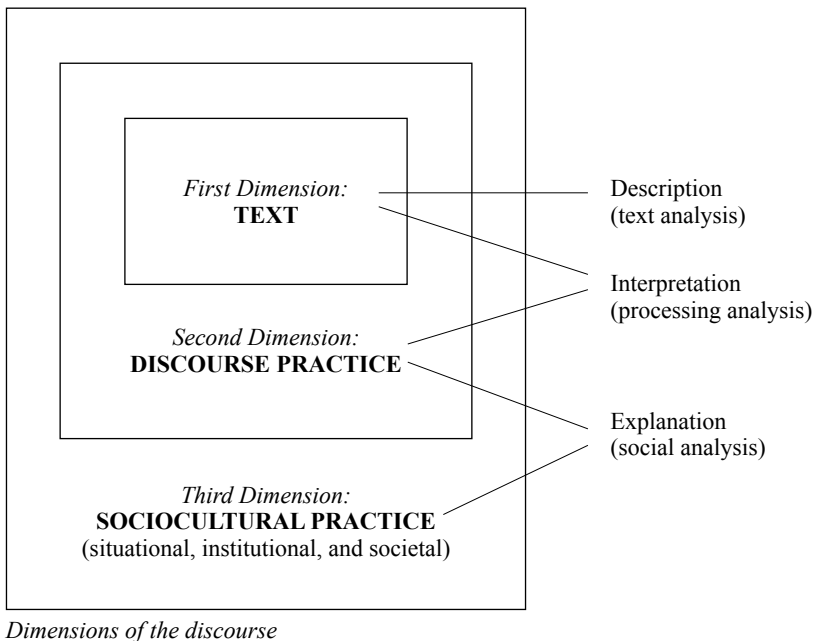
alliances. In another sense, they integrate rather than dominate over the subordinate groups. This can be seen by the hegemonic actors identified in Section 4.2

It is also worthy to understand the counter-hegemonic power struggle (highlighted in Section 5.2) as their alternative discourse argues against the dominant ideas of the hegemony that tend to be considered legitimate. There is an obvious tension between the hegemony and counter-hegemony but their discourses can shape one another. It is crucial to note that their various discourses surround the debate over Golden Rice in the Philippines, and that each discourse is differently constructed and may also be influenced by other discourses. An individual’s perception and understanding of Golden Rice is mediated through a certain discourse; however, discourse always tackles the constantly changing meanings and representations over time. Overall, the purpose of discourse analysis is not to explain the truths about the reality of the situation but to clarify how the ongoing discursive practices create and construct this reality—thereby, exposing the reality that is merely presented to us, which we accept as natural.

4.1.2. Fairclough’s CDA framework

This study employs Fairclough’s CDA (1989, 1992). His framework is outlined and illustrated in the figure below.

Figure 1: The framework of Fairclough’s critical discourse analysis (CDA); (adapted from Fairclough 1989, 1995)



Fairclough's three-dimensional CDA is embedded within the sociocultural context and displays discourse "in the immediate situation, in the wider institution or organization, and at a societal level" (Fairclough, 1995, p. 97). In the first dimension, the analysis of the features of words through speeches, text, and images is considered to identify attitudes within the discourse and clarify how language constitutes one into a certain community. In the second dimension, the use of the words and the composition of sentences are identified and interpreted to understand the changes of our views on the subject (i.e., Golden Rice). In the third dimension, the analysis is situated in the social and historical context and the institutional circumstances to visualize the creation of social relationships and practices according to norms and traditions.

4.1.3. Framing

This study gives specific attention to how stakeholders frame their discourse and how it is perceived. Framing is how we focus on certain events and concepts (Goffman, 1974). Thus, revealing the framing allows one to truly discover the underlying discourse in the way it is constructed for our own understanding: what messages are conveyed to us by the stakeholders and the struggles and defense mechanisms of certain issue frames (van Hulst and Yanow, 2016). The concept of framing cannot be excluded from this analysis and the practice of CDA asks "whose frames are being activated—and hence strengthened—in the brains of the public" (Lakoff, 2010, p. 72).

4.2. Selection of key stakeholders

From the discussion of CDA, the stakeholders have been identified and categorized in accordance with the exercise of their strategies or tactics, into the following: hegemony, counter-hegemony, and the middle-ground.

Hegemony

- IRRI and PhilRice, the proponents of Golden Rice. The former is the international institute and the latter is the national institute
- Bureaus, Institutes, and Councils from Executive Departments under the Philippine government¹⁵

Counter-Hegemony

- Magsasaka at Siyentipiko para sa Pag-unlad ng Agrikultura (MASIPAG)¹⁶ spearheads the Stop Golden Rice! Network (SGRN), a regional campaign network that was established in 2014 with more than 30 organizations across Asia collaborating to condemn Golden Rice (MASIPAG, 2020)

15 Several bodies under the Philippine government may have different views and perspectives on Golden Rice, which should be better investigated and revealed in the future.

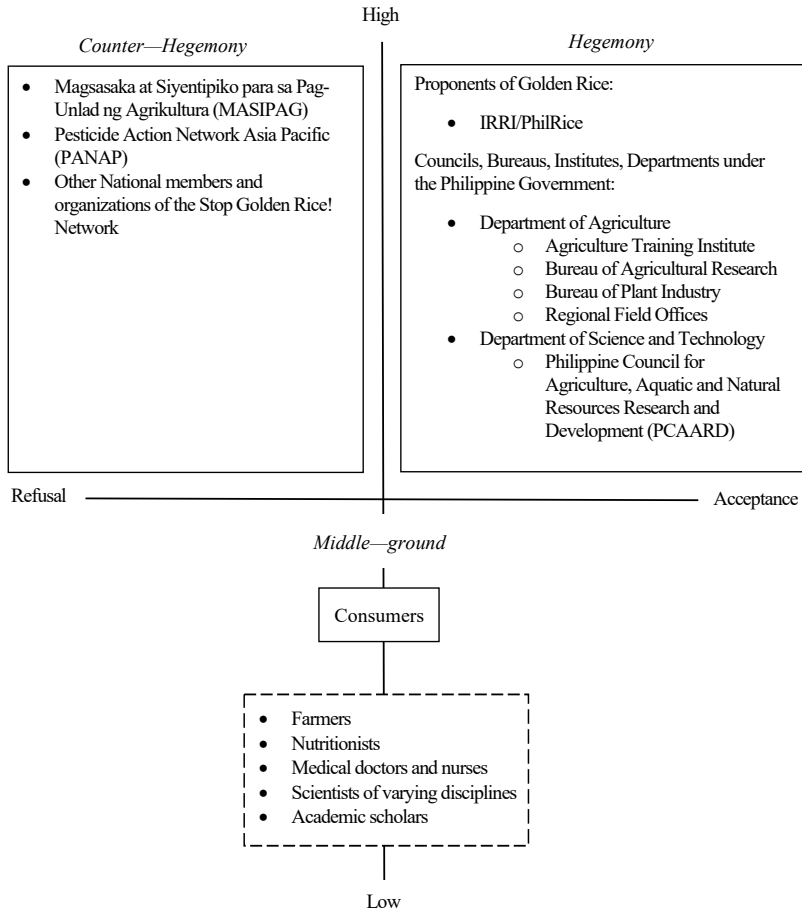
16 Is a farmer-led network of people's organizations, NGOs, and scientists that work toward sustainable use and management of biodiversity through farmers' control of genetic and biological resources, agricultural production, and associated knowledge (MASIPAG, n.d).

- Pesticide Action Network Asia Pacific (PANAP), a member of the SGRN
- Other national members and organizations of the SGRN¹⁷

Middle-ground

- Consumers, the targeted receivers of Golden Rice

Figure 2: Mapping out the key stakeholders on acceptance and refusal—high and low toward Golden Rice



¹⁷ Members of the Philippines are MASIPAG, PANAP, RESIST! Agri-TNCs Network, Kilusang Magbubukid ng Pilipinas (KMP), Philippine Network for Food Security Programs (PNSFP), Sibol ng Agham at Teknolohiya (SIBAT), Health Action for Democracy (HEAD), and Philippine Task Force for Indigenous Peoples Rights (TFIP).

There are other key stakeholders that should be considered as the middle-ground for this study, particularly, farmers, nutritionists, medical doctors, nurses, scientists of varying disciplines, and academic scholars. These stakeholders are still mapped out in Figure 2; however, these stakeholders shall be omitted in the analysis because of the dearth of data and knowledge from these stakeholders. Moreover, it further complicates the existing complex relationships and goes beyond the scope requirements for this study; however, it should be considered for future research.

4.3. Research design and data collection

A mixture of different types of data and interviews were used for the CDA to determine the answers to the main research question posed throughout this study. CDA was used to analyze the 41 pieces of data that were collected. Data were mainly collected through government publications, publications by key stakeholders sourced from their own website, information from websites, and data circulated through news and social media (e.g., Twitter). Additionally, three semi-structured interviews were conducted with informed consent with the counter-hegemonic stakeholders mainly MASIPAG and PANAP. The reason for collecting different types of data was to allow for a better method to delve into the underlying representations and motivations behind the constructed discourses through the ways in which language was used. The interviews and questionnaires had a dual purpose of offering information and clarifying and confirming whether the opinions corresponded with the discourses that were being disseminated through text. This data triangulation should help strengthen the validity of the sources.

5. Findings and analysis from CDA on Golden Rice

This section presents the findings from the data collected and the analysis of the texts and interviews through the CDA methodology. The findings are divided into two sections: (i) six themes to support the hegemonic stakeholders and (ii) eleven themes to support the counter-hegemonic stakeholders. These seventeen themes help understand how discourses have been framed, disseminated, and understood. First, the findings are quoted according to the relevant text or speeches that were identified for the stakeholders. Thereafter, the CDA analysis of the findings is presented. At least one excerpt or quote that best exemplified the theme has been analyzed.

5.1. Themes supporting the hegemony

For the hegemonic stakeholders, their opinions on Golden Rice are extremely positive as they are either the proponents of Golden Rice or hold a position as an investor for the project. The following themes describe the reasons why hegemonic stakeholders agree with Golden Rice and how they use discursive strategies to sway public opinion to accept Golden Rice commercialization.

5.1.1. Serving a humanitarian purpose

“It is expected to supply up to 30–50 percent of the estimated average Vitamin A for preschool aged children and pregnant or lactating mothers” (IRRI, 2017).

From the first quote, IRRI and PhilRice clarify that Golden Rice can supply the given amount of Vitamin A by presenting a statistic that the public may deem true, particularly if they have little knowledge or scientific and technical expertise. However, the statement should be taken with a grain of salt as one may criticize that what they fail to do is to present a reliable source to confirm the estimates. Nevertheless, the echoing focus on preschool-aged children and pregnant or lactating mothers remains striking to the general audience as it evokes a sense of empathy—the ones who are suffering from VAD and whose chances of being healthy can be potentially improved through Golden Rice.

“... patent donated for humanitarian purpose” (IRRI, 2018).

“Patent” holds a strong connotation of control and a manifestation of one’s ideas onto another. However, coupling “patent” with “donated for humanitarian purpose” alters its negative connotation into one that emanates more positivity. Based on the development of Golden Rice, the patent once held by Syngenta caused a negative image of GMOs as Syngenta was deemed a controversial transnational corporation. However, with Syngenta donating their patent on Golden Rice to IRRI and PhilRice, it seemingly removes Syngenta from the equation and absolves them from any backlash if potential hazards of Golden Rice are presented once Golden Rice is commercialized. Instead, it further elaborates their act of humanity. This is owing to IRRI and PhilRice’s better general reputation as public research institutes. However, this can be simply critiqued as a smoke-screen and that traditionally Syngenta is still very much attached to Golden Rice.

“There is a strong need to make Vitamin A readily available in a food source that is widely produced and consumed in order to reach those who cannot afford other sources of Vitamin A. This is the gap that Golden Rice aims to address” (Corpuz, 2018).

The use of “strong need” and “readily available” characterizes Golden Rice as crucial since the current interventions are not solving VAD. By focusing their reasoning on the individuals who “cannot afford” Vitamin A alternatives, IRRI and PhilRice frame the problem to their liking allowing them to project the advantages of Golden Rice. Therefore, affordability as a problem is framed, and that Golden Rice will fill this gap by not only being affordable but also in its ability to exhibit better Vitamin A properties.

5.1.2. International regulatory safety approvals

The proponents of Golden Rice use international regulatory food safety evaluations to a great extent to persuade other stakeholders that Golden Rice is safe. They use the following statement to project Golden Rice as safe and without any risks to health, rather as an option to mitigate VAD.

“Research and development of Golden Rice adhere to scientific principles developed over the last 20 years by international organisations such as the World Health Organization (WHO), the Food and Agriculture Organization of the United Nations (FAO), the Organization for Economic Co-operation and Development (OECD) and the Codex Alimentarius Commission. These are the same principles that inform the safety assessment of national regulatory agencies, such as FSANZ, Health Canada, and the US FDA, which have already assessed Golden Rice as safe to plant and safe to eat” (IRRI, 2019).

The continuous listing of well-known and trusted international organizations is used to justify the methods employed to promote Golden Rice. Name-dropping and equating the international safety principles as the foundations that Golden Rice has passed in the evaluations create an air of confidence in the way they present themselves. The use of the word “adhere” hints that IRRI and PhilRice follow strict scientific rules and principles and do not disobey the Codex Alimentarius Commission. Mentioning the “last 20 years” generates the impression that the proponents themselves are an experienced institute, and with regulatory safety approvals, there should be no need to question their legitimacy. These approvals positively frame IRRI and PhilRice with the foreign leading regulatory agencies. Additionally, it illustrates that the discourse and narrative conveyed by the hegemony has persuaded the regulatory bodies to believe this as the truth. Therefore, the public, unaware of Golden Rice, would be more likely to believe the narrative of the hegemonic stakeholders who seem to be supported by these legitimate agencies.

5.1.3. National regulatory recommendations

“GR2E Rice is as safe for human food and animal feed as its conventional counterpart. The DENR-BC¹⁸, after a thorough scientific review and evaluation of the documents (...) recommended the issuance of a biosafety permit. The DOH-BC¹⁹ (...) concluded that GR2E will not pose any significant risk to health and environment and that hazards, if any, could be managed by the measures set by the department. DOH-

18 Refers to the Department of Environment and National Resources-Biosafety Committee (DENR-BC)

19 Refers to the Department of Health-Biosafety Committee (DOH-BC)

BC also recommended for the issuance of biosafety permit for GR2E Rice. Furthermore, the SEC²⁰ expert also recommended for the issuance of biosafety permit for this regulated article after assessing the socio-economic, social and ethical indicators for the adoption of Genetically Modified Organisms” (DA-BPI, 2018).

The proponent’s own study of Vitamin A levels in Golden Rice acted as the sole evidence on which the national regulatory bodies based their evaluations, which undeniably lead to positive safety recommendations by the JDC and inevitably framed their research as sufficient. This can be criticized by the use of “thorough scientific review” as their review was only based on nonindependent research. Moreover, it has been concluded that Golden Rice would not have any health risk and environmental hazards, but if any “could be managed by the measures set.” The auxiliary verb “could” indicates a certain possibility for the government agency to either handle or dismiss the hazards, depending on the strength of their measures; however, there is confidence that no risks will arise.

5.1.4. Inclusion of the public

A strategy that was used by the hegemonic stakeholders to appeal to the public was mainly through the use of public consultations spearheaded by PhilRice and the DA-BPI. However, this can be criticized because the national regulatory body through the newly revised JDC in 2016 outlined it as a requirement. IRRI and PhilRice’s objective is two-fold: to carry out the requirements of the JDC and to appeal to the public. However, the extent to which they include the public in the dialog is questionable. This following quote explains the purpose of the public consultations and the need for transparency between the hegemonic stakeholders and the public.

“This empowers the communities to participate responsibly in a critical biosafety decision- making process. The communities will be provided with all the information about the project and Golden Rice, which were also posted in the community’s most accessible areas” (ISAAA, 2018).

Applying the word “empowers” onto the communities apparently provides them the ability to speak out and be part of the dialog of the hegemonic stakeholders in a “critical decision-making process.” Importance is placed upon the members of the public as one of the key stakeholders who can make decisions on Golden Rice. Doing so may easily convince the public; however, this can be criticized as an accommodating frame to encourage members to attend public consultations merely for administrative purposes rather than to acknowledge and put value on their opinions.

²⁰ Refers to the Socio-economic, Ethical and Cultural (SEC) expert

The following quote focuses on the public consultation or hearing based on the proposal for the field trial application of Golden Rice by the proponents on July 19, 2018 in San Mateo, Isabela.

“Audience Check: barangay captains, farmers, nutrition workers, teachers. Members of the local council, which convened the event, are seated up front (...) reminds the public (it’s a full house!) that comments are encouraged and will be entertained at the end of the PhilRice presentation” (IRRI, 2018).

Here, the attending stakeholders have been identified and the insertion of the “it’s a full house!” in parentheses along with the exclamation mark depicts the strong intent of the writer to depict that many members of the public have shown interest in the public consultations. This excerpt was taken through Twitter, a social media channel that allows for live updates, which is helpful to understand what was going on at that particular point in time. The main criticism of these public consultations is that there was no public access to the meeting minutes; instead, only tweets through this social media application provided the details. However, one may further undermine this by stating that the tweets were being carried out by an individual working for PhilRice, the proponents of Golden Rice. Furthermore, Twitter itself has limitations of approximately 280 characters per tweet. Therefore, the live tweeting by the proponent may be biased because of the framing of the narrative, as they would tend to capture more of what PhilRice has to say over the public and this can be seen throughout the whole Twitter thread with each tweet having short descriptions of what has happened. Moreover, the use of Twitter for describing these public consultations suggests that their target audience is individuals who have access through a registered account on the application or through smartphones, computers, internet connection, and who have knowledge about the application. Additionally, other individuals would be unaware of this had they not been following the Twitter account of PhilRice.

Another strategy that they use to appeal to the public is involving and quoting first-person testimonies to give verification to the purpose and support of Golden Rice.

“What kind of children are we going to raise if they are deficient of the micronutrients they need? Now, we are being offered with a solution through Golden Rice and I think we should give it a chance (...) Fely is just one of the hopeful mothers and homemakers who dream to see their children and grandchildren achieve a bright and a healthy future” (PhilRice, 2018).

The strength of the personal opinion creates empathy; moreover, a new insight on positive opinions of Golden Rice from an individual of the public, particularly from a mother, closely links the targeted demographic. It also paints those against Golden Rice as less emphatic; one can infer that if you reject Golden Rice, you

effectively do not support *healthier* options for pregnant mothers and children. The question asked at the beginning of the quote is phrased much like a rhetorical question where there is no need for an answer as it is known. IRRI and PhilRice's framing of this testimony may encourage the public to ask what can be done to help the Golden Rice Project.

“Researchers behind the Golden Rice Project are really responsible for complying with all the requirements before they proceed to the actual field trial. Hence, let us give them the benefit of the doubt that they are doing this project for the sake of the greater number of people in our community” (PhilRice ,2019).

This is another personal opinion and testimony from a governor of the Isabela province, where the field trials of Golden Rice have been located. Therefore, the use of “benefit of the doubt” is heavily relied on by the relationship of the individual to the proponents of Golden Rice and the beliefs that can be extracted from their relationship. One may criticize that this is a persuasive approach of the proponents of Golden Rice to appeal to the public by involving the dialog of the members of the public into their narrative. Moreover, because one or two personal testimonies have been mentioned, it should not generalize certain groups of the public as being in favor of Golden Rice, but this may not be noticed by individuals with little knowledge or those who do not follow the debates on how the proponents of Golden Rice frame their own narrative.

5.1.5. Changing definitions of Golden Rice²¹

“Golden Rice is being developed as a potential new food-based approach to improve Vitamin A status” (IRRI, 2013).

“Golden Rice to complement existing interventions to address Vitamin A deficiency (VAD)” (IRRI, 2017).

“Golden Rice is intended to be used in combination with existing approaches to overcome VAD, including eating foods that are naturally high in Vitamin A or beta-carotene, eating foods fortified with Vitamin A, taking Vitamin A supplements, and optimal breastfeeding practices” (IRRI, 2019).

The purpose of Golden Rice according to IRRI and PhilRice seems to be constantly changing. Currently, they identify Golden Rice to be used along with other VAD

²¹ Through the use of the online digital archive, Wayback Machine, which allows users to see what websites looked like in the past (Internet Archive, 2020).

approaches, which they accordingly list out. However, in 2017, it was described as a complementary solution and there was no mention of mixing Golden Rice with other alternatives. Likewise, from their online definition from 2013, many would have interpreted Golden Rice as *the* solution to VAD because of the vagueness of their definition. However, because of a backlash by anti-Golden Rice groups and the counter-hegemonic stakeholders, they redefined Golden Rice as a complementary solution, which may currently be interpreted as *one* of the solutions to VAD in a possible attempt to further reduce counter-hegemonic criticism. However, the current definition can interpret Golden Rice as an improving factor that may exhibit their Vitamin A properties only when used together with other alternatives. From this, it seems that the proponents of Golden Rice are either unable to fully define their own invention or are keeping their definitions vague so that their actions can align with the way they have framed Golden Rice.

5.1.6. More research and testing required

“Using modern biotechnology, specifically genetic modification, to develop new plant traits (e.g., beta-carotene content in Golden Rice) and integrate them into existing varieties acceptable to farmers and consumers normally takes many years” (PhilRice, n.d.).

PhilRice defends the length of research dedicated to Golden Rice despite several years that have passed without its commercialization. Many have assumed that Golden Rice would be commercialized throughout these years, which has brought up the question of why it is still an ongoing project. To defend their progress, the above argument gives reference to a DuPont Pioneer’s director of Global Policy and Scientific Affairs from a website called GMO Answers. Thus, the response, “normally takes many years,” is strengthened by the examples given on the website, to which they referred. However, it can be criticized that they do not give their own explanation and instead look toward another international stakeholder to help answer the questions of ongoing development.

“A lot of negative news and misinformation on the internet. Cites positive example of #GMO such as #insulin”

“Asks to look at the flipside: stopping research will also affect millions”

“Emphasizes that R&D hasn’t been rushed, asks that public be open minded” “It isn’t being rushed to ensure safety and nutrition” (IRRI, 2018).

In these tweets, PhilRice pinpoints the negative depiction of Golden Rice in the eyes of the Internet users. The use of “affect millions” makes tacit contributions and creates the imagery that many will be affected around the world if the research

is stopped. Using the word “ask” creates an atmosphere where PhilRice is not demanding but rather inviting the public to be open minded. The guarantee of safety and nutrition by the proponents, in their dialog, frames IRRI and PhilRice as responsible institutes that aim to fully satisfy the public and who do not mind the length of research as long as Golden Rice is commercialized to please the public’s concerns. Furthermore, the use of hashtags in the tweet allows members of the public to easily find the proponent’s tweets and narratives when they come across the hashtags through searches or while browsing.

5.2. Themes supporting the counter-hegemony

Through the CDA analysis of the counter-hegemony it is found that the construction of their discourses is mainly a negative response, deliberate or not, to the discourses of the hegemonic stakeholders.

5.2.1. Threat to food sovereignty²²

“Our rights for deciding on the kind of seeds that we use, and the way we use them, are being threatened by the genetic modification of rice, our staple food here in Asia” (MASIPAG, 2014).

The use of the personal pronouns “our” and “we” demonstrates a certain bond and embeddedness of the individuals in the alliance of farmers and organizations with the food that they grow and eat. The inclusive language allows the reader to understand what grassroots organizations truly feel about Golden Rice. Its empathetic tone suggests indignation over how they will be or have been unfairly treated by the proponents of Golden Rice.

“Farmers are in a position of lack of power to decide for themselves (...) Look at the example of palm oil, they fooled the farmers that this will bring in more profit (...) The government is really bent in making Golden Rice the flavor of the month (...) in the mainstream they always miss the voice of the farmers and this is what the Stop Golden Rice! Network is trying to help with (...) Since forever, the farmers who are producers, are the poorest in society” (Lopez, T., personal communication, June 6, 2019).

This interview highlights the hegemonic stakeholders’ tactics that dwindle the sovereignty of the farmers, who have been deceived. Moreover, it is revealed that farmers, even though they produce our food, are the poorest in society.

²² Food sovereignty is the right of people to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems (Declaration of Nyéléni, 2007).

The mention of palm oil as an example allows knowledgeable readers to understand the controversy and consequences to the farmers that were influenced through supposed government trickery. However, nonknowledgeable readers would be left in the dark, clueless about the hegemonic tactics. The description of Golden Rice as the “flavor of the month” posits that Golden Rice is the current and most prominent example of GM crop, and once commercialized it will eventually fade from the public eye and no longer be of interest, until another “flavor” (i.e., another innovation or GM crop) is introduced.

5.2.2. Golden Rice for profit-gain

Linked to food sovereignty, the counter-hegemony also argues that instead of a step for humanity, Golden Rice is rather a step toward gaining more profits for its proponents and their investors.

“The government should stop promoting these genetic engineering crops (...) They are making corporations richer and richer and farmers more indebted and poorer to maintain this status quo and even making the situation worse” (Lopez, T., personal communication, June 6, 2019).

Through this interview, it was valuable to hear the first-hand opinions on Golden Rice and the certainty in the tone of this statement. The repetition of the word “richer” reinforces the manipulation of the benefits of Golden Rice as a means to pocket money rather than for health. The remark of maintaining the “status quo” shows how the speaker is well-aware of the gap and unequal power relations between the corporations and farmers. This reinstates that discursive power and influence that the corporations have in their partnership with the hegemonic governmental bodies can encase and belittle the less powerful.

“Golden Rice is baseless, unscientific and nothing but a sensationalized product of giant agro-chemical corporations to lure super-profits” (MASIPAG, 2017).

The angry tone of this dialog is highlighted by the choice of strong adjectives. The use of “baseless,” “unscientific,” and “nothing” displays that the counter-hegemonic stakeholders do not believe that there is valuable evidence for Golden Rice. This is further shown by the choice of relating Golden Rice simply as a “product,” to be placed into the market for the sole purpose of earning profits for the proponents. Here, Golden Rice is stripped off its health and nutritional aspect and rendered a meager commodity.

5.2.3. Path to normalize GM crops

“The real objective is to create a perspective that GMOs are good for humanity. Even if there may be no economic benefits (...) in the short term, this is just the poster boy or poster girl. This is just the ‘Trojan Horse’ to bring in or create acceptability of modified GM crops and food, so that in the long term it will pave the way into GMOs as normal to everyone” (Medina, C., personal communication, June 7, 2019).

In this explicit elucidation, there is a strong use of imagery, typifying Golden Rice as a “poster boy” or “poster girl.” Aside from presenting Golden Rice as an attractive advertisement that best represents GMOs, the personification epitomizes the fame and features it holds. Furthermore, the symbolism and reference of Golden Rice as a “Trojan Horse” further establish the underlying deception that the hegemony leverages. Once Golden Rice is commercialized and securely used as the main staple rice crop in the Philippines, the hegemony may use strategies such as subterfuge or trickery against a target to create the normalization of any GM crop (biofortified or not) in the future.

5.2.4. Loopholes in the Philippine government

“On paper it looks good, not many countries have organic agriculture laws. You have an Organic Agriculture Law but are you just promoting Organic Agriculture Law? If you really think organic agriculture is the way to go, and you even created a law for it why do you support chemical based agro-farming, why do you support corporations that benefit from farmers—it’s very conflicting (...) The DA is very bureaucratic, some local or municipal governments have a certain level of independence but mostly if the national office wants you to do this, I think they will do this” (Lopez, T., personal communication, June 6, 2019).

The personal tone of this excerpt and the inclusion of the posed questions raise uncertainty based on the Organic Agriculture Law. Here, the term “you” puts the hegemony in the spotlight for interrogation. The repetition of the word “why” shows reluctance in trying to understand the Organic Agriculture Law and the loopholes within it. There is a redundant objective in pursuing an Organic Agriculture Law yet also pursuing biotechnology and genetic engineering.

“The DA has its own biotechnology division and they promote modern biotechnology (GMOs). The question here is how can a government agency promote and regulate, there is a conflict of interest. They promote and then regulate and so, ultimately, the regulations are promotion. In the history of the Philippines, not a single application for commercialization has ever been denied, everything has approved (...)

We have no law liability and regress about GMOs, contamination and health impacts (...) we have no law on who would be responsible” (Medina, C., personal communication, June 7, 2019).

The simple sentences outlined by Medina create an inconvenience to counter-hegemonic stakeholders by announcing that, sadly, no GMO applications in the Philippines have been denied. However, this is the reasoning as to why they still push for and fight against the hegemonic stakeholders on Golden Rice. There is bewilderment about the fact that the government promotes and regulates GMOs. One may criticize the government and ask about their decision-making techniques on GMOs and where their interests truly lie. Furthermore, the Philippines has no law to claim responsibility and liability for potential hazards; thus, the blame can be placed on anyone.

“Unfortunately, a policy loophole in the country indicates that once circulated in foreign states and approved by international bodies—the application for direct use is as good as approved despite national opposition. This will serve as a blanket green light for direct use including launching of clinical feeding trails among Filipino children” (MASIPAG, 2018).

Opening the sentence with “unfortunately” illustrates the disappointment on the methods that the hegemonic stakeholders can and have used to their advantage. “Blanket green light” symbolizes the safety net and hidden opportunity that can be used by the proponents to earn foreign approval to influence the national approval.

“The Environmental Risk Assessment (ERA) Form is useless in the sense that the answers to the questions are ‘not applicable.’ An ERA should be done by an independent group, and the ERA should be more substantial, broader and deeper in scope, and subjected to scoping, not in a pro forma questionnaire” (Medina, 2017).

The above quote displays discontent and is an excerpt from a letter addressed to the proponents on Golden Rice about the proponent’s nonindependent study on Golden Rice, which was used as the only evidence and basis when applying for regulatory safety approvals. Medina, as a specialized environmental scientist, has noted that the studies had been exercised through a questionnaire form to which answers were simply “not applicable.” Based on his expertise, the results were unsatisfactory and its robustness was questioned as it did not fully describe the potential risks involved in Golden Rice. Moreover, it is noteworthy that the study by the proponents was also used to apply to the national regulatory body for the “direct use as food and feed, or for processing” (DA-BPI, 2018) and was accepted as sufficient. It seems that the proponents’ discourse is apathetic to the potential risks of Golden Rice.

5.2.5. Health and safety concerns

“(...) claim of safety is wishful thinking” (Panerio, C., personal communication, June 25, 2018).

The use of “wishful thinking” accentuates the opinion that the hegemony’s safety claim of Golden Rice is based on what they want to believe or what they determine as pleasing to the ears for their own sake. In other words, the safety of Golden Rice relies on the hegemony’s beliefs rather than on complete technical and scientific evidence.

“Rice is a staple food of Filipinos and we eat it all the time (...) Is Golden Rice a food or a drug? There are two things, safety and efficacy—you do not talk about safety and efficacy in food, you only talk about these in terms of drugs. Yet Golden Rice is planned for widespread release” (MASIPAG, 2017).

This interrogative sentence is based on the idea that the two categories, food or drug, have different regulatory frameworks and approaches—Golden Rice has to be categorized in one of the two. Therefore, using inductive reasoning, it is stated that the question of safety and efficacy should not be asked when examining food, these questions should only be limited to drugs. By bringing back the discourse into the local context, it is framed as an issue that Filipinos should be concerned about.

5.2.6. Alternative to Golden Rice

“There are lots of vegetables and fruits very rich in Vitamin A so you don’t need Golden Rice (...) The social causes cannot be solved by genetic modification” (Lopez, T., personal communication, June 6, 2019).

The casual manner of this dialog has the ability to engage with the reader at a personal level to allow them to understand the existing Vitamin A-rich foods available for consumption. There is an emphasis in the last sentence that the counter-hegemonic actors remain fixed on the social causes, such as poverty; however, Golden Rice technofix is not the solution.

5.2.7. Environmental concerns and threats to traditional varieties

“The framing from us, as an environmental scientist, is that we are not ready to accept it because there is no environmental assurance and insurance or data to show the safety or to prevent any untoward or even expected release of such (...) The law of men cannot be circumvented by the biological law of nature” (Medina, C., personal communication, June 7, 2019).

The above statement is by an environmental science specialist, which implies credibility because of his expertise. The use of specific words pertaining to environmental science such as “assurance” and “insurance” puts the individual’s knowledge on the subject of Golden Rice into perspective, acting as a cause for environmental concern. “Assurance” explains the analysis and understanding of the potential impacts while “insurance” explores the costs of restoring the potential damages caused by Golden Rice on the environment. The opinion is critical on the proponents’ claims on Golden Rice’s environmental safety, as Medina requires more and better data to fully explain whether it is safe for the environment.

Similarly, threats to the traditional rice variety sector can also be presented under the same theme.

“Golden Rice is a death reaper to our local rice sector as traditional rice varieties will be vulnerable to GMO contamination” (MASIPAG, 2018).

The use of the metaphor also personifies Golden Rice as a symbol of death that will kill off the current local and traditional rice varieties. Golden Rice is placed into a negative framing as the reason why the Philippines and its traditional rice sector will suffer at the hands of these GMOs.

5.2.8. Exclusion of the public

“Public consultations by the advocates are one-sided and they only talk about the benefits and when they talk about the limitation, they are the only ones talking about the manageable limitations—they prevail over the discussion. We are just the peripheral audience that are raising some questions and we cannot raise all the questions in the portion of Q&As. There are many ways consultations are being manipulated to suit the needs or objective of those who sponsor it (...) how can you have an educated and well-informed public consultation when GMOs are, in fact, abstract in nature that laymen cannot even understand what it is. The issues are not very obvious unless you are an expert or specialist in some aspects” (Medina, C., personal communication, June 7, 2019).

The above narrative presents that exclusion was evident in the public consultations, which should not only be open to the public but also inclusive. Although one may argue that the inability to answer the proposed questions by the public was because of time constraints, the following excerpt from the tweets that recount the public consultations reveal the selectiveness of the question and answer section.

“Q1: Why have previous field trials not required a public consultation, but Golden Rice does?” “A: The public consultation is a new requirement, but PhilRice notes needs for community participation.”

“Q.5: Corporate monopoly issue. How can farmers be happy if costs are high? Also brings up Bt corn²³ and glyphosate, feeding trials, traditional varieties, land grabbing.”

“Councillor asks that Qs be focused on the field trials”

“Councillor closes discussion, other councillor interjects, says most Qs came from outsiders” (IRRI, 2018).

Public consultations called for the participation of the public community in the processes of Golden Rice because it is a new requirement as outlined in the JDC. In this dialog, an individual had posed the question of the corporate monopoly issue. Judging from this perspective, the question may have been posed by a member of the counter-hegemony. Although a seemingly valid question, it had been dismissed by the councillor supervising the public consultation as having a different focus to what is being discussed.

5.2.9. Advocacy and campaigning

“We’re angry and that’s why many people are protesting, forming organizations, and lobbying, precisely because our government has been very ineffective in looking at the welfare of the Filipinos—especially the farmers, our producers” (Lopez, T., personal communication, June 6, 2019).

“It’s not the actual uprooting that’s already symbolic of farmers but the more important thing is to have a massive information campaign because the government is reneging. That’s why we are calling for a thorough long-term independent study of Golden Rice” (Panerio, C., personal communication, June 25, 2018).

Here, the counter-hegemonic stakeholders’ explicit deliveries of the different emotions of anger and frustration are effective in catching the attention of the reader. They also recognize themselves that apart from advocating against Golden Rice, they should take over the information campaigns because of the shortfalls of the Philippine government, who is assumed not to take action. The Philippine government should be informing the public about Golden Rice, but have been “ineffective;” once again negatively framing the hegemonic actions.

”In August 8, 2013, more than four hundred farmers led the historic uprooting of Golden Rice experimental fields at Pili, Camarines Sur to signal strong opposition to Golden Rice trials and commercialization (PANAP, 2017).”.

²³ Genetically modified maize crop

Their “strong opposition” suggests a reason for being able to headline the news because of the level of protests they did. Therefore, members of the public who heard or read about these protests may know more about the perceived motivations behind Golden Rice through the eyes of the counter-hegemony.

5.2.10. Scientific and nutritional claims of Golden Rice are lacking

“The personal motivation of those scientists, assuming that they are acting on their own personal level, is simply that they think they would like to be the first breakthrough or known—that culture in science is important of course. Scientists who are promoting Golden Rice are not scientists anymore, they are already salesmen or cheerleaders. Scientists should be so-called independent, they should be so-called disinterested, you have no bias. But when you promote, you are no longer a scientist (...) They say that we are anti-science. No. We want more science, we want to study more, we want more independent and rigorous long-term studies of the safety. There is a lack of science and we want more” (Medina, C., personal communication, June 7, 2019).

In the above quote, the motivations of the scientists behind Golden Rice are questioned and critically discussed in a negative tone. For the counter-hegemony, the scientists working for Golden Rice seem to be interested in the potential recognition for a breakthrough in science, working on a rice crop that can save VAD-affected populations. By visualizing and categorizing the scientists as “salesmen” or “cheerleaders,” their perceived purpose provides evidence as a means of advertisement. Similarly, the counter-hegemony has been recognized as anti-science by the hegemonic stakeholders; however, counter-hegemony demands rigorous scientific work and expresses dissatisfaction with what has been provided by the proponents, which is inadequate to promote Golden Rice. The counter-hegemony frames themselves as more active participants in the discussion surrounding Golden Rice. However, hegemonic actors may beg the question of how much more science is needed.

5.2.11. Organic farming

“We promote organic agriculture and organic farming but the organic farming is to avoid expensive inputs, for sustainability, as well as to avoid buying expensive pesticides, chemical fertilizers and seeds (...) They frame organic farming that it will not feed the world, and therefore, we need GMO to feed the world—how do you situate this? It’s a matter of priorities, feeding the world is not only about the population of today, we also have to think of feeding the world of the population of tomorrow—the so-called intergenerational justice” (Panerio, C., personal communication, June 25, 2018).

The excerpt depicts the push for organic agriculture as an alternative to Golden Rice. There is a sense of belonging regarding organic agriculture in how the quotation is phrased. It combines the firm view against Golden Rice with the question of sustainability in mind and what organic farming can provide. Furthermore, it pushes for the inclusion and collaboration of consumers and farmers to oppose GMOs for their own benefit and livelihood. Organic agriculture is promoted by the counter-hegemony to stop individuals from becoming tied to several expenses and consequences of GMOs especially Golden Rice. Organic agriculture has been proposed as an opportunity to cultivate food that would be sustainable for the future.

5.3. Summary of findings

For the hegemonic stakeholders, the six themes presented were humanitarian purpose, international regulatory safety approvals, national regulatory recommendations, and need for more research and testing; along with their primary discursive strategies, that is, inclusion of the public and changing definitions of Golden Rice.

For the counter-hegemony stakeholders, eleven themes were presented, namely, threat to food sovereignty, means of profit-gain, way to normalize GM crops, loopholes in the Philippine government, health and safety concerns, current Golden Rice alternatives, exclusion of the public, lacking scientific and nutritional claims of Golden Rice, and need for organic farming; along with their primary discursive strategy, that is, the use of advocacy and campaigning in the form of protests to undermine the legitimacy of the hegemonic discourses.

6. Discussion: Deconstructing the stakeholders' narratives

This discussion attempts to piece together the contrasting discourses between the hegemony and counter-hegemony to answer the main research question alongside the concepts of framing, power relations, and inclusion. It further deconstructs and explains the stakeholders' narratives that was previously analyzed in the findings section.

The main research question is: What are the influencing strategies that the stakeholders use and how do they use these strategies to persuade the public to either accept or refuse the potential commercialization of Golden Rice?

6.1. Hegemonic strategies

First, the main strategy used was international regulatory safety approvals and national regulatory safety recommendations. However, the counter-hegemonic stakeholders effectively reveal a policy loophole, and that the submitted applications carried out by the hegemonic stakeholders are based on nonindependent studies, excluding any independent study or evidence. With the approval of renowned international regulatory bodies, and given the policy loopholes in the Philippines,

applications submitted to the local regulatory bodies seem to be automatically approved. Therefore, the hegemonic stakeholders' strategy to first approach international regulatory bodies for their endorsement on the safety of Golden Rice essentially disables the national regulatory bodies to argue against the ensuing safety approvals; thus, this strategy is akin to lobbying. Moreover, with no law to claim liability once GMOs or Golden Rice is approved, the hegemonic stakeholders may evade responsibility by putting the blame onto others for the risks and hazards of Golden Rice.

Second, the public consultations that happened in San Mateo, Isabela, were strategized by the hegemonic stakeholders to quickly review the requirements mandated by the JDC. There were no underlying clauses explaining how the public consultations should be carried out, only that they should be part of the process for regulatory approval to increase the transparency on Golden Rice. The public consultations were easily framed in favor of the proponents of Golden Rice, being organized by the PhilRice alongside the DA-BPI. Considering the proponents' power over the public consultation, the dialog was determined either by minimally answering certain questions or dismissing questions deemed not specific to the concerned topic. The counter-hegemony argued that the public consultations were one-sided and that the proponents prevailed over the discussion. Accordingly, hegemonic stakeholders embraced powers as the provider of information and facilitator of the discourse during the public consultations; meanwhile, the public and the counter-hegemony were framed as receivers, who were given the chance to talk only once, within the limited portion of questions and answers proposed. The hegemony reprehended the selective answering, restricted time, and abstract discussion on Golden Rice, despite the hegemony's claim that the public consultations were transparent and well-informed. The allegiance of the proponents of Golden Rice with the government entities warrants the dismissive attitude with which the counter-hegemony frames their discourse.

Third, the hegemonic stakeholders have skillfully used their ability to change their narratives over time. As the findings have shown, their statements on their own website have undergone several changes, thereby altering their narrative. Initially in 2013, Golden Rice was described as a new food-based approach to improve Vitamin A status, thereby, creating the frame for Golden Rice as the new solution to VAD. However, the framing of Golden Rice as *the* solution received considerable backlashes, particularly by the counter-hegemony. In 2017, they added the food-based approach definition by clarifying that Golden Rice is an important "complementary" intervention to address VAD. In the same year, they submitted applications to the foreign regulatory safety bodies of FSANZ, Health Canada, and the US FDA, and were waiting for their approval. The year 2018 saw the approval by these international regulatory safety bodies and the positive published reports on the application for direct use as food and feed, or for processing. In 2019, they refurbished their website to include the new details and progress on Golden Rice, and reinstated that Golden Rice be used in combination with the existing approaches to VAD, further outlining the alternative approaches. Consequently, it seems that

the lax definition of Golden Rice was helpful in the ways the proponents framed their discourse so they would not be limited to the strict definitions. However, it is worth remembering that science-based evidence should instead be determining the narrative and not the other way round.

Lastly, one of their more recent strategies was framing by accommodating a certain discourse within the discourse of the hegemonic stakeholders. The findings illustrated and outlined the attempt to include individuals identified as middle-ground stakeholders to support the hegemonic stakeholders' discourse, for example, women and mothers, VAD-targeted demographic. This was an attempt to make the discourse seem more acceptable to the middle-ground stakeholders who may or may not have the knowledge on Golden Rice. By using individual testimonials, the hegemony displayed their narrative with more empathetic tones to appeal and attract the public while still being firm and coherent on their own motivations through Golden Rice; moreover, they indicated the nonproponents to be less empathetic. Similarly, by using the governor's opinion on the proponents of Golden Rice and the warranted benefit of doubt for the greater good, the accommodating framing of the hegemonic stakeholders rendered them as having good relationships with the provincial governors where the controversial field trials had taken place. Thus, the public may eventually exercise the belief that Golden Rice is decent and moral. Despite their framing to accommodate public interest, the analysis essentially shows that the public was still excluded. Their accommodating strategy was designed to deceive the counter-hegemonic and middle-ground stakeholders to believe that they are participating well in discussions and that their interests were included in the project.

6.2. Counter-hegemonic strategies

The strategies used by the counter-hegemony involved constructing a discourse by disintegrating the faulty aspects and framings of the hegemonic discourse, that is, by counteracting their strategies. Although the counter-hegemony was more reactive than proactive in their discourse, the constructed discourse by the hegemony currently has more power to commercialize Golden Rice.

First, the most influential strategy practiced was advocacy and campaigning. Through their advocacy, they were able to raise awareness and bring about the social justice that Golden Rice conceals. Moreover, their advocacy was used to question how decisions are made by the proponents, especially the governing bodies of the Philippines that will be the point of departure about whether Golden Rice becomes commercialized. Additionally, the counter-hegemonic strategies were multi-purpose, namely, to ensure societal participation within the political sphere and agenda, create new spaces for conversation, bring (back) alternative solutions to VAD, and trigger community action upon the conceived problem through the likes of protests. Advocacy campaigns involved active promotion of issues nested in or used as part of a community initiative to bring power in the discourse that they held to persuade the public. The counter-hegemony ensured public inclusion,

especially of those who were affected the most—the consumers and farmers. Consequently, they gained the trust of these middle-ground stakeholders by putting forth a discursive strategy as an effective method for knowledge dissemination. Additionally, by circulating information about the diversity of diet and the currently available and affordable fruits and vegetables that contain higher Vitamin A than Golden Rice, the counter-hegemony tried to ensure that the public feels less inclined to support Golden Rice given the alternatives.

Second, by working together with members of the public (particularly with farmers as many of the counter-hegemonic stakeholders are grassroots organizations), they endeavored to bring about a change through the Philippine government. Their activities were holistic and integrative, which may effectuate exercised power through alliances. The Organic Agriculture Law 2010 was implemented and proposed as an initiative by the main national members of the Stop Golden Rice! Network. The passing and the enactment of the law suggested the power of the counter-hegemony within the Philippine government despite being seemingly undermined by the hegemonic stakeholders. Although the Organic Agriculture Law 2010 comes into conflict with the pursuit of biotechnology by the DA, it should still be considered an achievement for the counter-hegemony. Because of this, they heavily promoted organic agriculture within their groups and organizations through information campaigns of their own. Although their discursive strategy to promote organic agriculture was not as strong as that of the proponents of Golden Rice, they prompted key questions of sustainability into practice. From the literature review, Aerni and Bernauer (2006) noticed that advocacy can create change in businesses and governments on topics. Therefore, organic agriculture could be the next buzzword with respect to the middle-ground stakeholders once they are more aware of it. With the question of sustainability in mind, the hegemonic stakeholders may turn to conventionalizing organic agriculture to gain popularity and a better powerful political position in the public sphere. Nevertheless, the counter-hegemony has persistently claimed organic agriculture as an alternative system to mainstream agriculture, placing value on the natural agricultural systems (Campbell et al. 2010). Currently, this may be considered a long-shot but the push for organic agriculture still remains as the counter-hegemony's effective discursive strategy; however, only until organic agriculture itself becomes mainstreamed.

Finally, the counter-hegemony attempted to disconnect the scientific and nutritional claims framed by the proponents of Golden Rice in the hegemonic narratives. By pinpointing the faults and the errors in the claims of the hegemony, the counter-hegemony created space to explain and disprove the reasons why they are considered “anti-science;” thus, they reframed themselves as desiring more science-based evidence. The counter-hegemonic stakeholders conducted their own nutritional and safety studies to prove that the hegemonic stakeholders' studies are unsatisfactory. Similarly, the linkage of hegemonic employed scientists with occupations such as “salesmen” or “cheerleaders” located on the opposite spectrum of what scientists do, effectively associated them with their desire for money and power—a lobbyist. Through this, the counter-hegemony constructed their discourse

by disproving and disconnecting certain narratives from the hegemonic discourse along the way to reduce the hegemonic stakeholder's validity.

As for the middle-ground consumers, particularly those that are malnourished and truly suffering from VAD, they were the receivers of the influencing strategies that the more powerful and outspoken stakeholders surrounding them disseminated to shape the way in which the consumers behave in their acceptance or refusal of the commercialization of Golden Rice in the Philippines. However, the power which prevails among public thinking in terms of either the hegemonic or counter-hegemonic requires more research.

7. Conclusion

To better delineate and reveal the discourse of the key stakeholders embodied in the discussion of the potential commercialization of Golden Rice, this study analyzed the strategies that the hegemonic and counter-hegemonic stakeholders used to persuade the public to either agree or reject the commercialization. The objective of this study was to explore and understand the relationships between key stakeholders in the way they frame their discourse in their sociopolitical context using CDA as an avenue of analysis.

Regarding the potential commercialization of Golden Rice, it is highly possible that the commercialization will push through given the current strength and power of the hegemonic discourse and their inherent relationship with the government—the ultimate decision-maker. The history of the GM crops in the Philippines, negligence of the Organic Agriculture Law, and the international safety approvals also serve as favorable conditions for commercialization. It is difficult for the competing discourse created by the counter-hegemonic stakeholder to prevail in this situation. Although it is not in the scope of this study to discern the truth, the counter-hegemonic discourse seems to triumph as the more open and honest approach toward Golden Rice and should be understood with greater importance concerning our health and diet. Nonetheless, there are possibilities for the counter-hegemony to overcome this difficulty, but it requires stronger integration of similar minded groups and maximum effort that go beyond challenging the status quo. Ultimately, the counter-hegemonic stakeholders also realize this situation of uneven power relations and reluctantly admit that “it is a sad reality in the Philippines, we feel that it (Golden Rice) might ultimately be approved because of lobbying”²⁴.

24 Medina, C., personal communication, June 7, 2019.

For future research, the middle-ground stakeholders²⁵, located in the lower quadrants in Figure 2, who were omitted from this study can be analyzed. It will bring a better understanding of the dynamic relationships within the Golden Rice debate when reconnected and re-embedded into the discursive strategies presented in this study and may uncover underlying or overlooked power that may sway acceptable or unacceptable opinion on the commercialization of Golden Rice. Nevertheless, Golden Rice is still in its regulatory processes in the Philippines, and future discourse will surely see significant changes.

This study is important in the paradigm of the Philippines because it illustrates the strategies of the pro- and contra-Golden Rice stakeholders. Agreeing with either discourse ultimately guides us to be either for or against the commercialization of Golden Rice. If the hegemonic discursive strategies have been successful in convincing the middle-ground stakeholders, Golden Rice will be permanently placed into our food system. It will be understood as our answer to food security; however, it shall devoid us of our food sovereignty—we will be unable to disassociate Golden Rice from the local context of our food, health, and safety, especially if hazards or risks were to arise. If this occurs, the Philippines will be the first country in the world to commercialize Golden Rice. This will translate globally to influence other countries and the related stakeholders to frame positive opinions and desirability for Golden Rice and upcoming GM food innovations to be implemented into our food system. Thus, it is important to analyze discursive strategies of stakeholders on narratives—ignoring these may bring about unwanted realities, especially in what we eat.

Acronyms

BAI	Bureau of Animal Industry
BPI-PPSSD	Bureau of Plant Industry – Plants Products Safety Services Division
DA	Department of Agriculture
DA-BPI	Department of Agriculture – Bureau of Plant Industry
DENR	Department of Environment and Natural Resources
DILG	Department of Interior and Local Government
DOH	Department of Health
DOST	Department of Science and Technology
FSANZ	Food Standards Australia New Zealand

²⁵ Farmers, nutritionists, medical doctors and nurses, scientists of varying disciplines, and academic scholars.

GE	Genetic Engineering
GMO	Genetically Modified Organisms
IRRI	International Rice Research Institute
ISAAA	International Service for the Acquisition of Agribiotech Applications
JDC	Joint Department Circular
LGU	Local Government Unit
MASIPAG	Magsasaka at Siyentipiko para sa Pag-unlad ng Agrikultura
MLT	Multi-location Field Trials
NGO	Nongovernmental Organization
PANAP	Pesticide Action Network Asia Pacific
PhilRice	Philippines Rice Research Institute
STRP	Scientific and Technical Review Panel
TNC	Transnational Corporation
US FDA	United States Food and Drug Administration
VAD	Vitamin A Deficiency

Appendix A Details of Interviewees

Interview Date	Name of Organization	Name of Interviewee	Position of the Interviewee	Specialization of the Interviewee
June 25, 2018	<i>MASIPAG</i>	Cristino Panerio	Current National Coordinator of MASIPAG	Agricultural Engineer
June 6, 2019	<i>PANAP</i>	Terence Lopez	Programme Officer of PANAP	Steering Committee Member of the Stop Golden Rice! Network
June 7, 2019	<i>MASIPAG</i>	Dr. Chito Medina	Previous National Coordinator of MASIPAG	Environmental Scientist

Appendix B Interview Guide

Thank you for accepting this interview. Before I start do you have any questions for me?

1. Has Golden Rice always been a central topic of discussion in your organization, since its introduction in 1999? Have your opinions on this crop changed over time?
2. There have been recent approvals in the safety of Golden Rice. For example, by Health Canada and the Food Standards Australia New Zealand in February and March, and most recently by the FDA. What do you think about this?
 - a. Is your opinion solely on commercialization specifically in the Philippines? Or any other country? [follow-up question]
3. Are you generally for or against any type of genetically modified crop, and why?
4. The Philippine government or certain governmental bodies seems to be in favor of the approval of Golden Rice. How do you feel about this?
 - a. Mention the public consultations if needed
5. What do you find to be the most pressing issue regarding Golden Rice and why do these issues concern your organization?
 - a. Perhaps you could give me examples? [probe]
6. What are you doing to address these problems in terms of efforts?
 - a. What has been working well or what has not been working well?
 - b. What about consumers?
 - c. Deficiency is still present so how can we improve on a nonGM alternative to help solve this?

[probe, if needed]
7. Do you have any comments or questions for me? Thoughts? Or anything you would like to elaborate on or for me to explain more?
8. Do you know anyone else, particularly people involved in NGOs, who I may be able to talk with to learn more about their work in resisting or even promoting Golden Rice?

Thank you very much for your time and patience for participating in this interview.

References

- Aerni, P. and Bernauer, T. (2006) “Stakeholder Attitudes toward GMOs in the Philippines, Mexico, and South Africa: The Issue of Public Trust,” *World Development* 34.3: 557–575.
- Campbell, H., Rosin, C., Norton, S., Carey, P., Bengé, J. and Moller, H. (2010) “Examining the Mythologies of Organics: Moving beyond the Organic/Conventional Binary?,” in G. Lawrence, K. Lyons and T. Wallington (eds.) *Food Security, Nutrition and Sustainability*. Earthscan, London, pp. 238–251.
- Chong, M. (2003) “Acceptance of Golden Rice in the Philippine ‘Rice Bowl’,” *Nature Biotechnology* 21.9: 971–972.
- Congress of the Philippines. (2010) *Republic Act No. 10068—Organic Agriculture Act: An Act Providing for the Development and Promotion of Organic Agriculture in the Philippines and for Other Purposes*. Metro Manila, Republic of the Philippines.
- Corpuz, D. (2018) Save Eyes by Opening Your Eyes to Golden Rice. Available at <https://www.philrice.gov.ph/save-eyes-opening-eyes-golden-rice/>, accessed on November 22, 2018.
- Declaration of Nyéléni (2007) Declaration of Nyéléni – Nyeleni – Via Campesina. Available at <https://nyeleni.org/spip.php?article290>, accessed on April 16, 2020.
- Department of Agriculture—Bureau of Plant Industry (DA-BPI) (2007) Guidelines for the Selection of Members of the Scientific and Technical Review Panel (STRP). Department of Agriculture—Bureau of Plant Industry. Manila, Philippines. Available at <http://biotech.da.gov.ph/upload/memo152.pdf>, accessed on October 18, 2020.
- Department of Agriculture—Bureau of Plant Industry (DA-BPI) (2018) Consolidated Report of PhilRice and IRRI’s GR2E Rice Application for Direct Use as Food and Feed, or for Processing. Department of Agriculture—Bureau of Plant Industry (DA-BPI). Manila, Philippines. Available at <http://biotech.da.gov.ph/upload/Consolidated-Report-gr2e-rice.pdf>, accessed on March 1, 2019.
- Department of Agriculture and Fisheries (n.d.) Mandate, Mission, and Vision. Available at <http://dafarmm.da.gov.ph/mandate-mission-and-vision/>, accessed on August 25, 2020.
- Department of the Interior and Local Government (DILG) (2016) DOST-DA-DENR-DOH-DILG joint department circular (JDC): Rules and Regulations for the Research and Development, Handling and Use, Transboundary Movement, Release into the Environment, and Management of Genetically-modified Plant and Plant Products Derived from the Use of Modern Biotechnology. Department of the Interior and Local Government (DILG). Manila, Philippines. Available at http://biotech.da.gov.ph/upload/Final_DOST-DA-DENR-DOH-DILG_JDCs2016.pdf, accessed on October 18, 2019.
- Dubock, A. (2019) “Golden Rice: To Combat Vitamin A Deficiency for Public Health,” in L. Q. Zenka, V. V. de Rosso and E. Jacob-Lopes (eds.) *Vitamin A*. IntechOpen. Available at <https://www.intechopen.com/books/vitamin-a/golden-rice-to-combat-vitamin-a-deficiency-for-public-health>, accessed on August 23, 2020.
- Fairclough, N. (1989) *Language and Power*. Longman. New York, N. Y.
- Fairclough, N. (1992) *Discourse and Social Change*. Polity Press. Cambridge, U.K.
- Fairclough, N. (1995) *Media Discourse*. Edward Arnold. London, U. K.
- Food and Agriculture Organization of the United Nations (FAO) (2002) *Chapter 2. Food Security: Concepts and Measurement*. FAO. Rome, Italy.

- Goffman, E. (1974) *Frame Analysis: An Essay on the Organization of Experience*. Harvard University Press. Cambridge, MA, U.S.
- Gramsci, A. (1971) in Q. Hoare and N. Smith (eds.) Lawrence & Wishart. London, U.K.
- International Service for the Acquisition of Agri-biotech Applications (ISAAA) (2018) Public Participates in Golden Rice Consultations in PH- Crop Biotech Update. Available at <http://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=16644>, accessed on March 16, 2019.
- International Service for the Acquisition of Agri-biotech Applications (ISAAA) (2019) GM Crop Events Approved in Philippines. Available at <https://www.isaaa.org/gmaprovaldatabase/approvedeventsin/default.asp?CountryID=PH&Country=Philippines>, accessed on April 29, 2019.
- Internet Archive. (2020). Internet Archive – Wayback Machine: About IA. Available at <https://archive.org/about/>, accessed on August 25, 2020.
- IRRI (2013) Golden Rice. Available at <https://web.archive.org/web/20131224002423/https://www.irri.org/golden-rice>, accessed on January 13, 2019.
- IRRI (2017) Golden Rice. Available at <https://web.archive.org/web/20171215095141/https://www.irri.org/golden-rice>, accessed on February 2, 2019.
- IRRI (2018) Happening Now: Public Consultation for #GoldenRice Field Trials in Isabela, Philippines. Stay tuned for updates. [Tweet] Available at <https://twitter.com/irri/status/1019834161685598208?lang=en>, accessed on July 4, 2019
- IRRI (2019) Golden Rice. Available at <https://web.archive.org/web/20190315173310/https://irri.org/golden-rice>, accessed on July 4, 2019.
- Kettenburg, A. J., Hanspach, J., Abson, D. J. and Fischer, J. (2018) “From Disagreements to Dialogue: Unpacking the Golden Rice Debate,” *Sustainability Science* 13.5: 1469–1482.
- Kimura, A. H. (2013) *Hidden Hunger: Gender and the Politics of Smarter Foods*. Cornell University Press. New York, N.Y.
- Lakoff, G. (2010) “Why It Matters How We Frame The Environment,” *Environmental Communication* 4.1: 70–81.
- Magsasaka at Siyentipiko para sa Pag-unlad ng Agrikultura (MASIPAG) (2014) Asian Farmers Unite to Stop Golden Rice. Available at <http://masipag.org/2014/05/asian-farmers-unite-to-stop-golden-rice/>, accessed on April 29, 2019.
- Magsasaka at Siyentipiko para sa Pag-unlad ng Agrikultura (MASIPAG). (2017) Farmer Groups Hit PhilRice for Renewed Push to Field and Feed Test Golden Rice. Available at <http://masipag.org/2017/11/farmer-groups-hit-philrice-for-renewed-push-to-field-and-feed-test-golden-rice/>, accessed on June 14, 2019.
- Magsasaka at Siyentipiko para sa Pag-unlad ng Agrikultura (MASIPAG) (2017) Congress Urged to Probe Golden Rice. Available at <http://masipag.org/2017/09/congress-urged-to-probe-golden-rice/>, accessed on June 14, 2019.
- Magsasaka at Siyentipiko para sa Pag-unlad ng Agrikultura (MASIPAG) (2018) Civil Society Decry FSANZ Approval of Golden Rice. Available at <http://masipag.org/2018/02/>, accessed on June 14, 2019.
- Magsasaka at Siyentipiko para sa Pag-unlad ng Agrikultura (MASIPAG) (2020) Stop Golden Rice Network. Available at: <http://masipag.org/sgm/>, accessed on May 25, 2020.

- Magsasaka at Siyentipiko para sa Pag-unlad ng Agrikultura (MASIPAG) (n.d.) About MASIPAG. Available at <http://masipag.org/about-masipag/>, accessed on July 1, 2019.
- Medina, C. (2017) *Comments regarding Golden Rice Application for Field Test and Direct Use for Food, Feed and Other Purposes*. [Letter] Manila, Philippines.
- Moghissi, A. A., Pei, S. and Liu, Y. (2016) “Golden Rice: Scientific, Regulatory and Public Information Processes of a Genetically Modified Organism,” *Critical Reviews in Biotechnology* 36.3: 535–541.
- Pan Asia Pacific (PANAP) (2017) Asia Farmers’ Network Resound Strong Call to Stop Golden Rice! Available at <https://panap.net/2017/08/asia-farmers-network-resound-strong-call-to-stop-golden-rice/>, accessed on June 19, 2019.
- Philippine Rice Research Institute (PhilRice) (2018). Give Golden Rice a Chance. Available at <https://www.philrice.gov.ph/give-golden-rice-chance/>, accessed on June 19, 2019.
- Philippine Rice Research Institute (PhilRice) (2019). ‘Golden Rice is a Responsible Research’ – Governor. Available at <https://www.philrice.gov.ph/golden-rice-responsible-research-governor/>, accessed on June 19, 2019.
- Philippine Rice Research Institute (PhilRice) (n.d.). Frequently Asked Questions on Golden Rice. Available at <https://www.philrice.gov.ph/golden-rice/qa/>, accessed on May 22, 2019.
- Potrykus, I. (2012) “‘Golden Rice’, a GMO-Product for Public Good, and the Consequences of GE-Regulation,” *Journal of Plant Biochemistry and Biotechnology* 21.1: 68–75.
- Potter, J. and Wetherell, M. (1987) *Discourse and Social Psychology: Beyond Attitudes and Behaviour*. Sage. Thousand Oaks, CA, U.S.
- Stone, G. D. and Glover, D. (2017) “Disembedding Grain: Golden Rice, the Green Revolution, and Heirloom Seeds in the Philippines,” *Agriculture and Human Values* 34.1: 87–102.
- Van Dijk, T. A. (2004) “Critical Discourse Analysis,” in D. Tannen, D. Schiffrin and H. Hamilton (eds.) *Handbook of Discourse Analysis*. Blackwell, Oxford, pp. 352–371.
- van Hulst, M. J. and Yanow, D (2016) “From Policy “Frames” to “Framing”: Theorizing a More Dynamic, Political Approach,” *The American Review of Public Administration* 46.1: 92–112.
- Weedon, C. (1987) *Feminist Practice and Poststructuralist Theory*. Blackwell. Oxford, U.K.
- Wesseler, J. and Zilberman, D. (2014) “The Economic Power of the Golden Rice Opposition,” *Environment and Development Economics* 19.6: 724–742.
- Wesseler, J. and Zilberman, D. (2017) “Golden Rice: No Progress to be Seen. Do We Still Need It?,” *Environment and Development Economics* 22.2: 107–109.
- Wesseler, J., Kaplan, S. and Zilberman, D. (2014) “The Cost of Delaying Approval of Golden Rice,” *Agricultural and Resource Economics Update* 17.3: 1–3.
- Wodak, R. (2001) “What CDA is About – A Summary of Its History, Important Concepts and Its Developments,” in R. Wodak and M. Meyer (eds.) *Methods of Critical Discourse Analysis*. Sage, London, pp. 1–13.
- World Health Organizations (WHO) (2019). Biofortification of Staple Crops. Available at <https://www.who.int/elena/titles/biofortification/en/>, accessed on July 4, 2019.
- World Health Organisation (WHO) (2020). Food, Genetically Modified. Available at https://www.who.int/health-topics/food-genetically-modified#tab=tab_1, accessed on July 1, 2019.
- Zimmerman, R. and Qaim, M. (2004) “Potential Health Benefits of Golden Rice: A Philippine Case Study,” *Food Policy* 29.2: 145–168.