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CREATION AND SHAPING OF PUBLIC ATTITUDE AND AWARENESS TOWARDS GM FOOD CROPS IN WEST BENGAL.

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Abstract:

Genetically modified products are emerging as the defining technology for the future of agriculture and food systems in India. Though the commercial cultivation of Bt Cotton was approved in India in April 2002, there was an indefinite moratorium imposed on Bt Brinjal in 2010 and on GM mustard in 2016. These moratoriums were imposed fearing the potential risks of growing genetically modified food crops. Meanwhile in 2013, Bangladesh (India's neighbouring country sharing borders with the Indian state of West Bengal) allowed for the commercial cultivation of Bt Brinjal. This has increased apprehension among the general public in West Bengal who fear that the porosity of the Indo-Bangladesh border may result in the leaking of the genetically modified food crop into Bengal's environment.

In this context, knowledge transfer with regard to GM crops is both complex yet critical in West Bengal. Initiatives to spread biotech information and awareness have been taken up by various agencies yet most of these initiatives only provide selected information to key stakeholders while the general public is left misinformed. The objectives of this research is to identify the role of new media, NGOs and social advocacy groups in spreading public awareness about GM food crops among residents of West Bengal. The research assesses whether the information dissemination agencies influence the public to view food risks as a threat to human security. The study uses interpretive methodology and quantitative methods like self-prepared questionnaires and depth-interviews. The findings of the study suggest that the new media, NGOs and social advocacy groups in West Bengal simply popularize alternatives like ecological agricultural initiatives like organic farming and they act as pressure groups on government agencies. These information dissemination groups do not act as catalysts or as motivating forces for the general public to be informed participants in the GM debate.

Introduction

The Indian public are always worried about how technological innovations affect their health, personal economy and quality of life. Public awareness is the public's level of understanding about

the importance and implications of technical innovations (Hart 2002; Priest 2001). Raising public awareness does not simply mean telling the public what to do, rather it is explaining issues and disseminating knowledge to people so that they can make their own decisions. The general public views new technological innovations with uncertainty and anxiety as the consequences of such technology are not known. This uncertainty is caused by a lack of information or uncertain information. In today's society information with regard to scientific innovations are limited within the science community and only experts have access to it. Excluding the public from accessing information pertinent to food would be a negative aspect of the science community.

Social and political debates about risks in food have been widespread in India over the last few decades. Food safety and methods of food production have always been a matter of concern in India but talking of food as the new 'risk' is a relatively recent phenomenon. Risk has been defined as the potential that a chosen activity (including the choice of inaction) will lead to a loss (an undesirable outcome). The notion implies that a choice having an influence on the outcome exists (or existed) (Beck 1992). 'Risk is the effect of uncertainty on objectives. Uncertainties include events (which may/may not happen) and uncertainties caused by a lack of information or ambiguity.' (ISO Guide 73)

Perception of risk influences attitudes, decision-making, and thus behaviour, of consumers, producers and others (see for example, Lobb *et al*, 2007; Finucane & Holup, 2005; Frewer, 2003). In the case of the GM debate this is particularly pertinent, as there are many conflicting claims and counter-claims regarding the potential risks and benefits of the technology. GM technology advocates have been frustrated by the choices made by the public and consumers based on risk perceptions that may bear little or no resemblance to actual risks. These perceptions, it is claimed, may be related to a number of factors, including the degree of perception of benefit (which in turn affects the level of risk that people are willing to tolerate), the level of information and knowledge relating to the risk faced, familiarity with the risk, trust in those with responsibility for providing information about, and regulating, the risk, and the sense of self control over exposure to the risk. These issues and others may have, to a lesser or greater degree, played a part in the public perceptions about GM technology and hence the level of acceptance of the technology.

To empower a public, awareness is required. Public awareness refers to the important role that community enthusiasm and knowledge has in building sustainable societies. When raising public awareness there are two main focus areas: first, there is the general public awareness, which involves widespread understanding and acknowledgement of the issues on a societal level; second, there is self-awareness, which occurs when individuals understand how the concept of GM food affects them personally.

Public attitude is the predisposition or a tendency among the public to respond positively or negatively towards certain ideas, objects, persons or situations. Attitude will influence the public's choice of action and responses to challenges, incentives and rewards. Attitudes are strongly

associated with levels of understanding and knowledge about the process, purpose and extent of the technology. Public holding a negative attitude towards GM foods could be either strongly opposed to the technology or they may adopt a cautious attitude. Negative attitude stems from lack of confidence in the level of understanding of the process and purpose of GM in food production. Public attitudes could also be positive and can range from strongly supportive to cautiously positive.

The Non-Governmental Organizations (NGOs), social advocacy groups and new media that comprise the GMO movement have taken centre stage in the Indian contestation over genetic engineering and the politics of food. Their influence over the public has been pervasive. Voluntary organizations are not a new phenomenon in India. Voluntary organizations can play a crucial role in awareness generation by supplementing government efforts as they are close to the minds and hearts of the public. They have roots in the public and can respond to the needs and aspirations of the community effectively.

A nongovernmental organization (NGO) is any non-profit, voluntary citizens' group which is organized on a local, national or international level. These organizations are task-oriented and driven by people with a common interest. NGOs perform a variety of service and humanitarian functions, bring citizen concerns to governments, advocate and monitor policies and encourage political participation through provision of information. NGOs provide analysis and expertise and serve as early warning mechanisms and help monitor and implement international agreements. Social Advocacy on the other hand is the representation done by anyone committed to the concerns of any particular group in society. Such concerns may be rights based or needs based. Advocacy, thus is a political process by an individual or group which aims to influence public-policy and resource allocation decisions within political, economic and social systems and institutions. Advocacy can include many activities that a person or organization undertakes including media campaigns, public speaking, commissioning and publishing research. Social media is used by social advocacy groups to facilitate civic engagement and collective action. The various roles of NGOs and Social Advocacy groups are: catalyzing population; supplementing government efforts; organizing public; educating public; providing training; disseminating information; mobilizing resources; promoting local leadership; acting as innovators; ensuring people's participation and promoting appropriate technology.

New media on the other hand are the various forms of social media platforms. These platforms allow for a two way communication and can often emerge as a forum for discussion of various topics of social interest. It is also a platform where the lay person can interact with the expert. Social media platforms can be used by people with similar areas of knowledge and awareness about certain issues can be spread through these platforms. These new forms of media also are agents of information dissemination.

NGOs, Social Advocacy groups and new media in India have contributed towards social

mobilization and social activism through their intensive campaigns, people's mobilization programmes and effective networks. NGOs, Social Advocacy groups and new media act as a social force facilitating collective action and mobilization of people for the purpose of achieving the desired objectives. These groups are using various people-oriented as well as people-centered strategies and these organizations build rapport with the people and mobilize them. The NGOs, new media and Social Advocacy groups play a vital role in making people environmentally aware and sensitive to take part in the development process (Biswambhar Panda et al-2003). NGOs, new media and Social Advocacy groups raise public awareness by recognizing the problems locally and globally; making the public aware about an immediate and urgent problem; making each individual aware of his/her role in society; lobbying with authorities on all levels. These groups also mobilize public through wide public campaigns in which they either disseminate information or involve stakeholders and civil society in solving problems on the local and regional level and also by combatting the ignorance and indifference of the public. NGOs, new media and social advocacy groups are some of the most trusted organizations in India.

Current Status of GM Food in India

In India, the first GM crop to be commercialised was Bt cotton. This was commercialised by the US company Monsanto in 1996. In India following a series of field trials and biosafety assessments, the GEAC (Genetic Engineering Appraisal Committee) approved the commercial cultivation of 3 Bt Cotton hybrids developed by Mahyco-Monsanto Biotech (MMB) for central and southern cotton growing states in April 2002. Subsequently several other seed companies obtained the license of Monsanto's Bt technology and developed many Bt hybrids. IIT Kharagpur in collaboration with J.K.

Seeds Pvt Ltd and Chinese Academy of Sciences along with Nath Seeds Pvt Ltd in 2006 broke the monopoly of MMB on Bt technology. According to T.M. Manjunath, (Ph.D in Agricultural Entomology; independent technical consultant serving in several expert committees of the Government of India) works on various traits and crops are in progress. Manjunath's compilation of GM crops in India at various stages of regulatory field evaluation as of 2012 identified the following traits—insect resistance, virus resistance, herbicide tolerance, drought tolerance, yield enhancement and delayed ripening. GM crops awaiting field trial according to Manjunath's compilation include Brinjal, Cabbage, Cauliflower, Corn, Tomato, Sugarcane, Papaya, Potato, Mustard, Rice et Bt Brinjal is being developed in India by the Maharashtra Hybrid Seeds Company (Mahyco, Jalna) along with University of Agricultural Sciences (Dharwad) and Tamil Nadu Agricultural University in Coimbatore. The GEAC had approved the commercial release of Bt Brinjal on 14th October 2009. Scientists, farmers and anti-GMO activists carried on protests and the Government of India officially announced on 9th of February 2010 that it needed time for the release of Bt Brinjal. The Supreme Court of India has stayed the commercial release of GM mustard (as

result of a petition filed by Aruna Rodrigues[1]) and has asked the Centre to take public opinion on such seeds before releasing it for cultivation.

NGOs, new media and social advocacy groups are emerging as a strong anti-GM movement in India as they continue to project Monsanto and other multinational seed companies as these corporate giants who have no regard for the small and medium scale farmer and they will soon start monopolising this GM technology and will replace traditional agricultural methods with this massive and grand technology.

Significance of the Study

1. The study will explore public understandings of food risks from the perspective of the 'lay' person residing in the districts of West Bengal.
2. The study will aim to understand the instrumental role that NGOs, social advocacy groups and new media can play in knowledge dissemination of GM Foods and Crops.

Objectives of the Study

1. To identify the role of NGOs, social advocacy groups and new media in spreading public awareness about GM Foods and Crops among the residents of Nadia, North 24 Parganas, South 24 Parganas and Hooghly districts of West Bengal.
2. To assess whether NGOs, social advocacy groups and new media influence the public to develop a positive or a negative attitude towards GM Foods and Crops.

Statement of the Problems

1. NGOs, Social Advocacy groups and new media help in raising public awareness about GM Foods and Crops among the residents of Nadia; North 24 Parganas; South 24 Parganas and Hooghly districts of West Bengal.
2. NGOs, Social Advocacy groups and new media influence the public of Nadia; North 24 Parganas; South 24 Parganas and Hooghly districts of West Bengal to develop a positive attitude towards GM Foods and Crops.

Methodology

The methodological approach adopted in the study, used interpretative methodology and quantitative methods like a self-prepared questionnaire and depth interviews. Self-prepared questionnaires assessed the frequency of; the content of; the quality of and the impact of awareness programs, campaigns and initiatives by NGOs and social advocacy groups.

Depth interviews were conducted on a range of people residing in the four districts of West Bengal. The respondents were chosen from a range of socio-demographic backgrounds. The issues covered

in these interviews were personal responses to GM Foods and GM Crops; view of genetic modification in comparison with older methods of food production; extent of available information from NGOs and social advocacy groups; the extent to which such information enables the choice as to whether to buy/eat/grow GM Foods and Crops; examples of specific GM products and reactions to these and the extent of confidence in the Indian Government's handling of GM Foods and GM Crops.

Review of Literature

Weak Aversion to GM Foods: Experimental Evidence from India by Sangeeta Bansal; Sujoy Chakravarty and Bharat Ramaswami (March 2010). Though a conventional analysis of consumer preference towards GM food is difficult because of the unavailability of market data yet this study uses experimental methods to study attitudes towards GM foods. The researchers use subjects from New Delhi, India outside the usual developed country context. This paper also examines how information formats (and in particular probabilistic information) matter to the formation of food preference. The study reports on an experiment that assigns information and labelling treatments to subjects who participated in laboratory experiments of food items that might be genetically modified. This paper thus considers a pathway by which the label affects the valuation of foods. This paper shows that this allows for the possibility that once a food is labelled, some of the existing consumers (of unlabelled foods) switch to labelled GM-free foods. These consumers are termed as 'weakly GM-averse' as against the 'strongly GM-averse' who are the consumers who decline to consume unlabelled foods suspecting them to be GM. The goal of the experiment is to test for the existence of weakly GM-averse consumers. The study uses 3 separate experimental sessions. 2 of the sessions used Bachelors degree students in Engineering (from the Indian Institute of Technology (IIT) in New Delhi). The other session consisted of University teachers from all parts of India (participants at a training course at the Jawaharlal Nehru University also in New Delhi). Of the total pool of 114 subjects, 64 were students and the 50 were older university teachers. The study sample is biased towards urban consumers with higher than average family income and educational attainment. This paper distinguishes between weakly and strongly GM –averse consumers. While both categories express aversion to GM labelled food, the former do not react to probabilistic information. The experiment conducted in this study confirmed the existence of weakly GM-averse consumers. While these consumers show no or little aversion to GM foods on the basis of probabilistic information, their aversion to GM labelled food is almost as large as that of the strongly GM averse consumers. This suggests that labelling would have an impact on the market of GM labelled foods.

The AFIC commissioned the Nielson Company Research to conduct a quantitative assessment of consumer attitudes toward food biotechnology. The research was conducted via an on-line survey of 1007 adults aged 18-64 and living in 5 major cities in 5 different countries. Out of these, 204

respondents were from New Delhi. The study revealed that consumers in India are very confident regarding the safety of food yet these consumers showed concern over inaccurate labels. The Indian respondents stated that they are interested to see more information on ingredients, chemicals and biotechnology –derived ingredients on the labels of food products. The study also revealed that the consumer attitudes in a food-producing country like India differ from the consumer attitudes of food-importing countries like South Korea and Japan. This study states that an improved understanding about the direct consumer benefits of biotech foods raises consumer acceptance. Indian consumers stated that they look for freshness, taste as the most attributive qualities in food followed by less expensive foods. They feel that GM foods can help meet all these attributes yet because of the lack of available information, they are reluctant to buy GM food. The study also revealed that consumer awareness about biotechnology is low.

Emerging Markets for GM Foods: An Indian Perspective on Consumer Understanding and Willingness to Pay by Satish Y Deodhar; Sankar Ganesh; Wen S Chern (June 2007) This paper addresses the issues of consumer awareness, opinion, acceptance and willingness to pay for GM foods in the Indian market. A random utility approach was used. Data was generated through a questionnaire survey which was administered to 602 respondents in the city of Ahmedabad and 110 respondents on the internet. It was observed that 90% from the city survey did not know about GM food. It was observed that GM food consumption seemed to increase as one moved away from the very poor income bracket to the middle income brackets. However, moving to the high income bracket does not seem to increase this likelihood. Being a female or a joint family member seemed to increase the likelihood of choosing non-GM rice and edible oil. Overall, the study shows that GM foods may be acceptable in the Indian market. However, consumer education societies, government ministries and biotech food crop companies may have to create awareness about the GM foods among Indian consumers.

Public Knowledge, Attitudes and Perceptions Towards Genetically Modified Organisms in India (Final Report-June 2010) By Dr Suman Sahai and Prof E. Haribabu (Joint Research by Gene Campaign and University of Hyderabad—Dept of Sociology) is a three year research undertaken to study the awareness, attitudes and perceptions to GM technology and GMOs among farmers, consumers and other stakeholders. The study with both quantitative and qualitative approaches was conducted in 5 states of Andhra Pradesh, Maharashtra, Punjab, Jharkhand and Assam.

The general trends seen in the research results were fairly uniform across states. It showed that attitude to food is overwhelmingly guided by cultural –religious factors, irrespective of educational and economic status. This rather than a rational analysis of the benefits of a particular food determines food choice. The sanctity of food is underlined by the clear articulation in the rural communities that any food that had been transformed in the way that GM foods are, would be unacceptable for special ceremonies and religious festivals. People said they would not offer such food to God during religious festivals or serve it on special occasions like a wedding feast. Gender

did not seem to be a big determinant of attitudes to GM foods. The government must take note that validating GM foods by pure science and promoting these foods on 'science based evidence' of safety is unlikely to be relevant in the backdrop of such public perceptions. The presumption that knowledge and awareness about the benefits of GM crops will automatically convince people of their attractiveness cannot be taken for granted. The level of awareness about GM foods was very low and confused among urban consumers who listed food nutrition and safety as the most desired attributes of food. Consumers by and large felt that not enough was known about GM foods and that more research was needed. They were unclear about what GM foods were and about the status of GM foods in India with respect to availability, labelling or risks and benefits. According to the study, government is the agency in which the most number of people have the greatest trust across farmers and consumers in all states; they see it as an agency whose information is reliable and that can be relied on to protect their interests (agency that should test for safety and monitor long term impact of GM foods). Across all states studied, the NGO community seemed to enjoy the least amount of trust amongst government agencies, companies, scientists and media. In the case of urban consumers, there was a divergence of views about information on GMOs. Many felt that NGOs provide useful, reliable information; others felt that NGOs doctored their information, like the companies did, to suit their ideology.

Review of the available literature shows that theories of risk have historically neglected food issues but in the wake of 'food scares' since the eighties, public confidence in the food industry and government regulatory bodies has been seriously undermined, giving rise to serious thinking on the issue. At the same time, since risk is an important determinant of food choice, risk has become increasingly attached to consumer attitudes and perceptions in general. Today, issues of control and trust have entered the discourse on food risk.

Survey through Self-Prepared Questionnaire Administered to General Public With Regard to Role of NGOs, New Media & Social Advocacy Groups in Information Dissemination, Influencing Public Attitude & Raising Public Awareness

A self prepared questionnaire (attached as Appendix No.1) was used to elicit responses from the general public residing in four districts of West Bengal namely Nadia, North 24 Parganas, South 24 Parganas and Hooghly. The questionnaire assessed the general public's perception towards the role of NGOs, new media and Social Advocacy groups in information dissemination with regard to GM foods and crops; the public's perception towards the role of NGOs and Social Advocacy groups in influencing government policy with regard to GM foods and crops. The questionnaire also assessed the general public's awareness about NGOs, new media and advocacy groups working with GM foods and crops. Finally the questionnaire was used to explore the general public's participation in workshops, seminars, conferences and campaigns with regard to GM foods and crops organized by NGOs and advocacy groups. The data collected through the self-prepared questionnaire was then computed and graphically represented.

Interpretive Methodology

This study positioned the meaning-making practices of human actors at the center of scientific explanation hence it adopted an interpretive methodology. It was conducted from an experience-near perspective in that the researcher did not start with concepts determined a priori but rather allowed these to emerge from encounters in the 'field'. The methodology used was a mixed research framework encompassing both qualitative and quantitative methods and measures. This research is exploratory in nature as it attempts to explore the risk perception of potential producers and consumers as based on the information provided about GMF by NGOS, new media and Social Advocacy groups in West Bengal. Their subjective perceptions formed the core data of the study; hence it needed the method that would deal with the topic in an exploratory nature. For the purpose of this study, the research paradigm that was followed is of mixed (qualitative and quantitative) nature, using semi-structured interviews.

Sampling

For this study, the sample from among the population of the general public residing in the four districts of West Bengal was selected through snowball sampling. Care was taken to get hold of respondents from both rural and urban areas of the four districts. The samples were also from a wide variety of occupations. Almost equal number of males and females were interviewed. Samples also varied in terms of their age and educational qualifications,

A total of 400 respondents were chosen from the general public across the four listed districts of West Bengal for the first part of the study.

Table No 1A: Sample Characteristics

Name of Districts	Total Number of Respondents	Rural	UrbanSemi	Urban
Nadia	100	32	41	27
North 24 Parganas	100	29	56	15
South 24 Parganas	100	31	25	44
Hooghly	100	38	28	34

Table No 1B: Sample Characteristics

Name of Districts	Males	Females
Nadia	60	40
North 24 Parganas	61	39
South 24 Parganas	53	47
Hooghly	34	66

Results and Analysis

As part of data collection, responses were taken from the general public/ potential consumers/ potential producers of GM Food in Nadia; North 24 Parganas; South 24 Parganas and Hooghly districts of West Bengal. The questions asked and responses collected are presented in the form of following tables and graphs.

The sample population were asked how much they have heard of or read about Genetic Modification and its use in food technology. Their responses are summarized in the figure below.

Figure No. 1A: Extent of Information on GM Technology

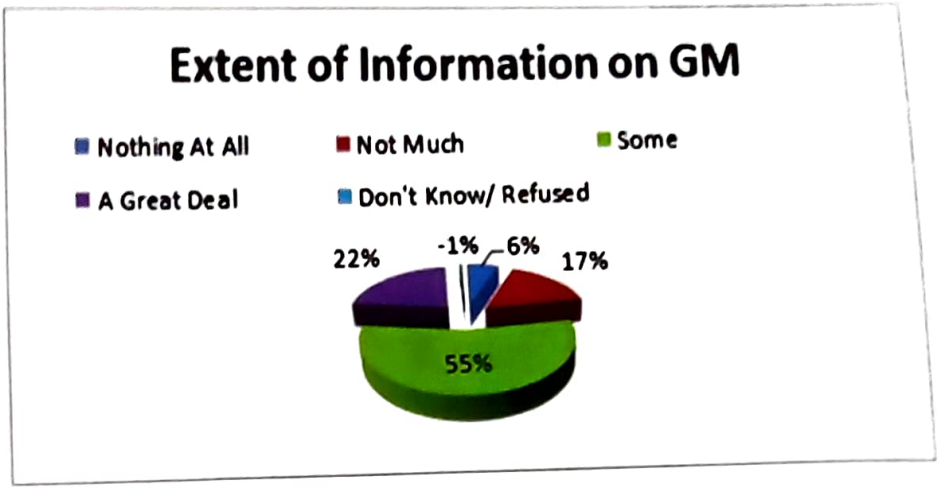
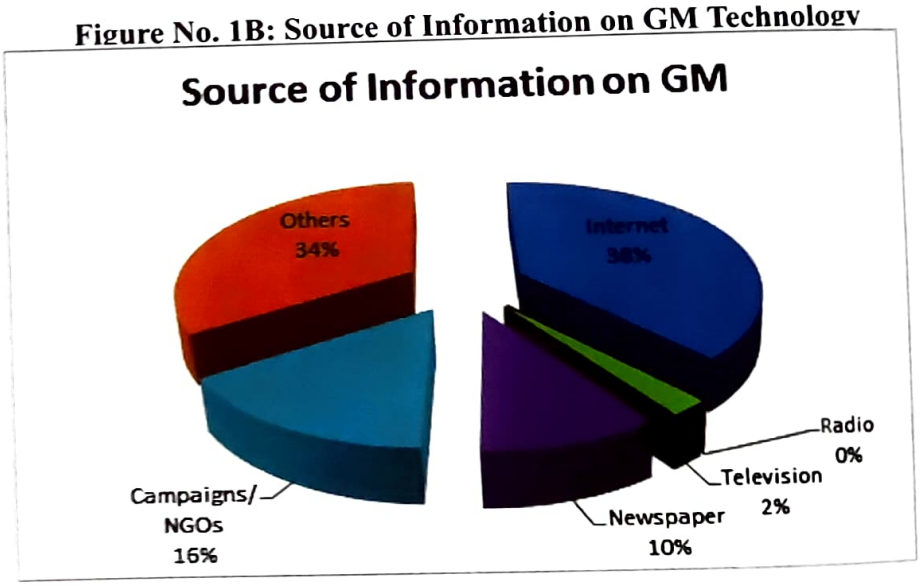


Figure No 1A shows that the majority of the respondents have some information on Genetic Modification and the application of this technology in food production.

When asked what is the source of obtaining information on genetic modification and the applicability of this technology in food production, the respondents provided a wide range of sources which are summarized below.

Figure No. 1B: Source of Information on GM Technology



38% of respondents cited the internet as a source of information on genetic modification, while 34% stated that they had obtained information on genetic modification technology from other sources like offsprings, siblings, friends, relatives, journals and the like. 16% of respondents were of the opinion that NGOs and anti-gmo campaigns are sources of information on genetic modification. Hence according to popular public opinion NGOs and advocacy does play a role in information dissemination but that role is not of great significance. Another interesting aspect observed was that the radio is not considered as a source of information dissemination.

The respondents were asked whether new media, NGOs and advocacy groups play a vital role in influencing government policy with regard to genetic modification. Their responses are summarized in the figure below.

Figure No. 1C: New Media, NGOs / Social Advocacy Plays a Vital Role in Influencing Government Policy on Genetic Modification

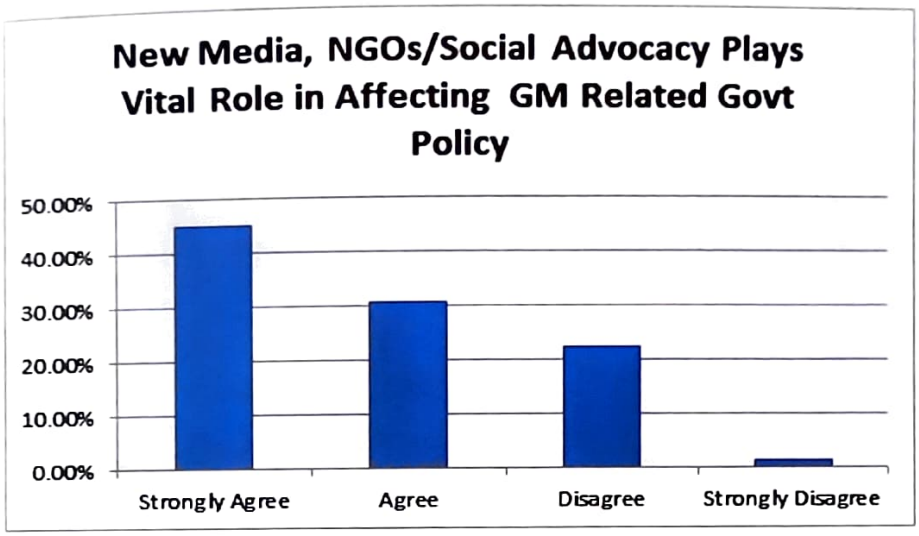
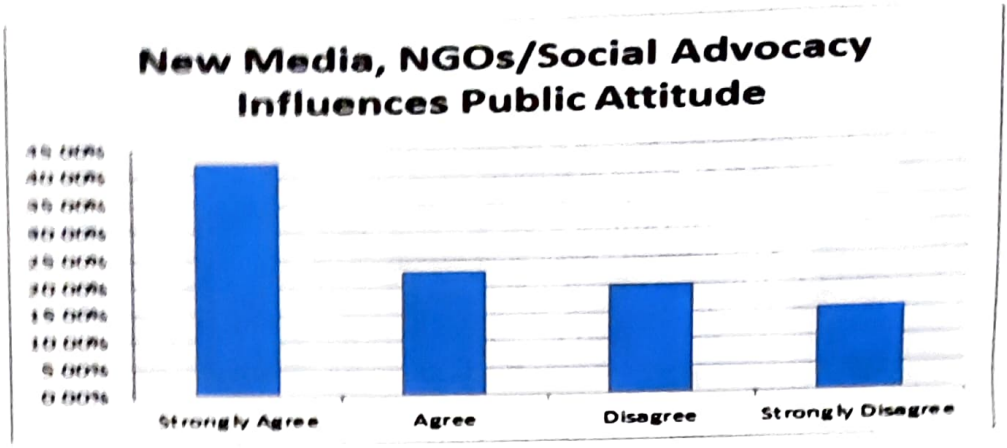


Figure No. 1C shows that the majority of the respondents strongly agree that NGOs and advocacy groups can influence government policy. It must also be stated here that the respondents who strongly agreed were mostly the ones employed in the education sector, in private or government service, in media and as professionals.

Majority of the respondents strongly agreed that new media, NGOs and social advocacy groups influence public attitudes. Details of their responses are summarized below.

Figure No. 1D: New Media, NGOs / Social Advocacy Influencing Public Attitude



On detailed questioning it was found out that the majority of the respondents were of the opinion that new media, NGOs and advocacy groups play an important role in influencing public sentiment as the public consider such organizations as more trustworthy than the media or government.

The respondents were asked whether they know of NGOs and social advocacy groups working with GM Food and Crops. Their responses were categorized district-wise. A summary of the responses are presented below.

Figure No. 1E: Awareness Among Respondents in Nadia about NGOs / Advocacy Groups Working With GM Crops and Food

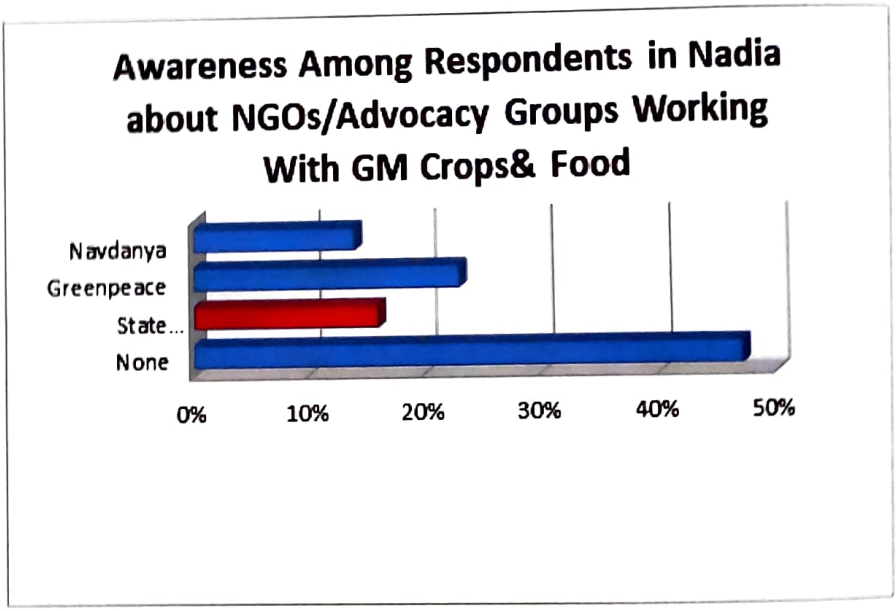


Figure No. 1F: Awareness Among Respondents in North 24 Parganas about NGOs / Advocacy Groups Working With GM Crops and Food

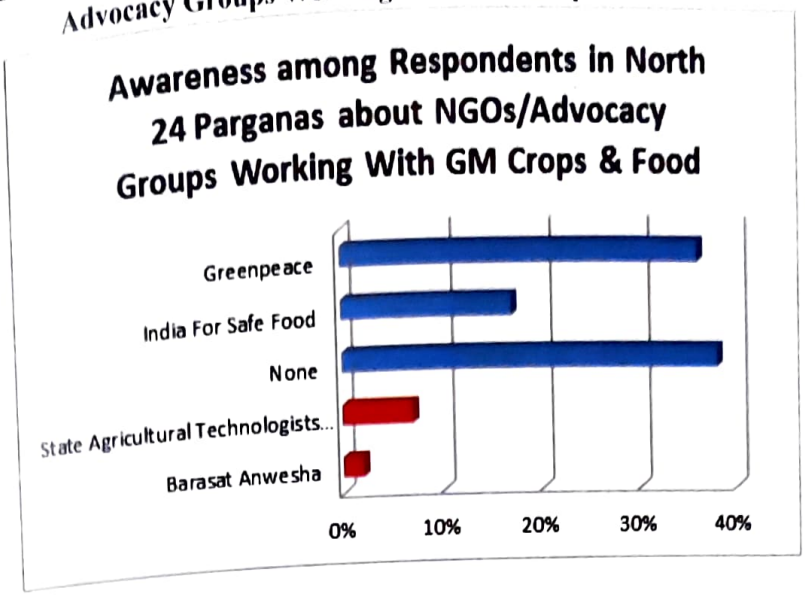


Figure No. 1G: Awareness Among Respondents in South 24 Parganas about NGOs / Advocacy Groups Working With GM Crops and Food

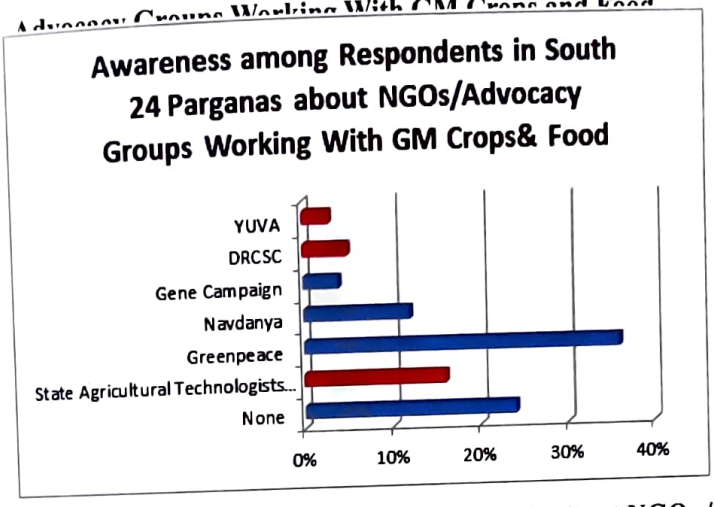
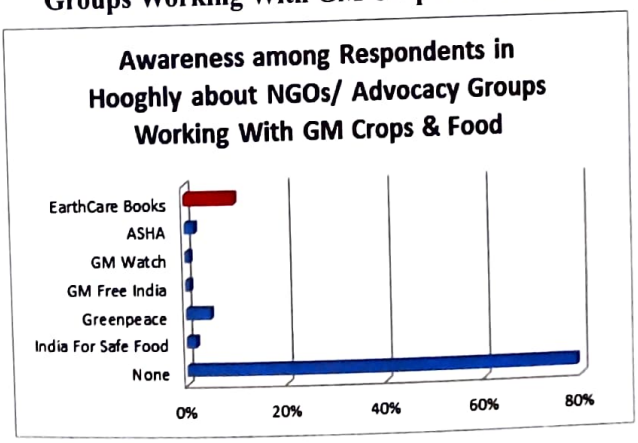


Figure No. 1H: Awareness Among Respondents in Hooghly about NGOs / Advocacy Groups Working With GM Crops and Food



In Nadia district 47% of the respondents were not aware of NGOs / advocacy groups working with GM Foods and Crops. Though among this group some stated that they were aware about NGOs working in the field of agriculture and rural development but they were not sure whether these organizations focused on spreading awareness with regard to GM foods and crops. 23% of the respondents were aware about Green peace and 145 were aware about Navdanya. The interesting observation was that 16% stated the name of a local organization—State Agricultural Technologists Service Association (SATSA).

The respondents of North 24 Parganas were more aware. 38% stated that they were not aware of any NGOs / advocacy groups working in the field of GM. 7% of respondents cited SATSA while 36% of them cited Green peace again. In this district 20% of respondents named another local NGO-Barasat Anweshan. While 17% knew about India For Safe Food.

In South 24 Parganas respondents named 3 local NGOs / advocacy groups working with GM, they were YUVA (3%); SATSA (16%) and Development Resource and Service Centre, Calcutta (DRCSC) (5%). 24% of respondents were not aware of any organization or group working with GM. While the rest of the respondents named organizations of national and international repute like Gene Campaign (4%); Navdanya (12%) and Green peace (36%).

Respondents of the Hooghly district were most unaware as 79% of respondents stated that they did not know of any organization working with GM foods or crops. Few of them stated national and global organizations like India For Safe Food (20%); Alliance for Sustainable and Holistic Agriculture (ASHA) (2%); GM Free India (1%); Green peace (5%) and GM Watch (1%).

It can thus be concluded that the majority of the population are not aware of NGOs / advocacy groups working with GM foods and crops. They may be aware of organizations working in the field of agriculture, extension and rural development but they are unaware of organizations working specifically with GM foods and crops. Green peace is the only organization cited by respondents from all districts. On detailed questioning it was found out that Green peace is most visible in the media especially on the internet and through blog links shared on social networking sites. Navdanya was another popularly cited organisation. Respondents were aware about it primarily because of their awareness about world renowned scientist and environmentalist Vandana Shiva. Names of 5 local organizations were cited in the survey namely SATSA; DRCSC; YUVA; Barasat Anweshan and Earth Care Books. These organizations have been reviewed in the latter half of the research to explore their role in awareness creation among the public.

The respondents were asked whether they have attended any workshop, seminar, conference or campaign with regard to GM foods and crops. Their responses have again been segregated district-wise and have been presented below.

Figure No. 1I: Attendance in Workshops, Seminars/Conferences and Campaigns of Respondents of Nadia District

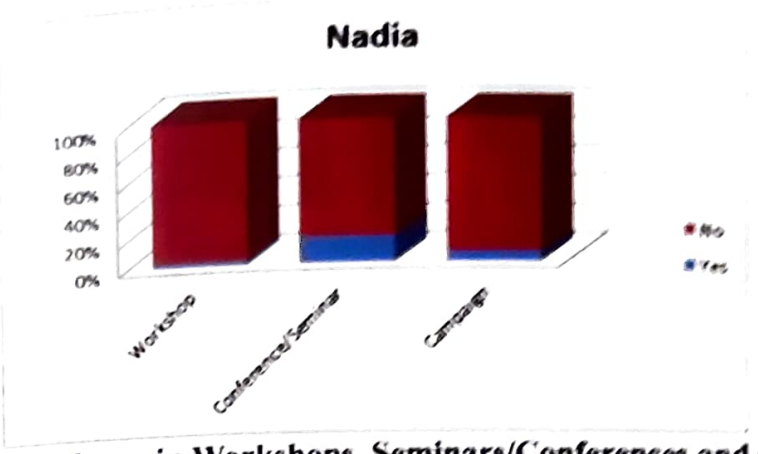


Figure No. 1J: Attendance in Workshops, Seminars/Conferences and Campaigns of Respondents of North 24 Parganas District

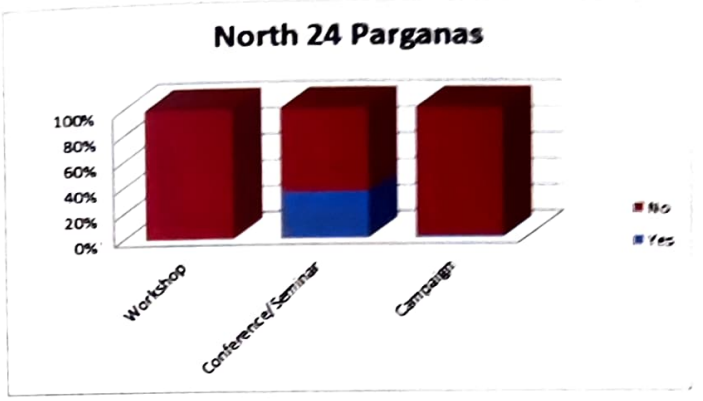


Figure No. 1K: Attendance in Workshops, Seminars/Conferences and Campaigns of Respondents of South 24 Parganas District

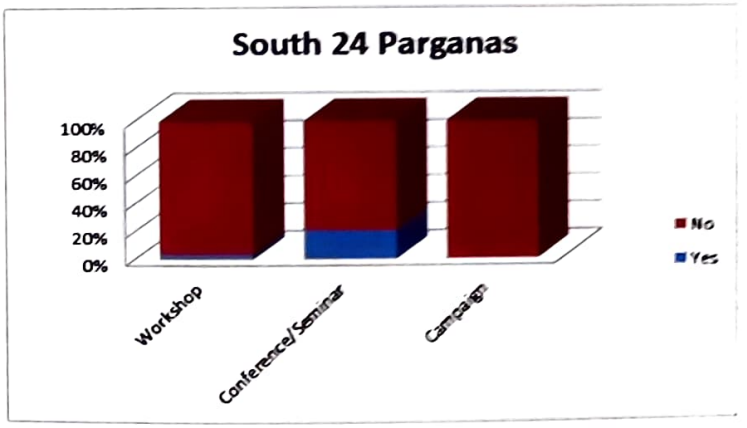
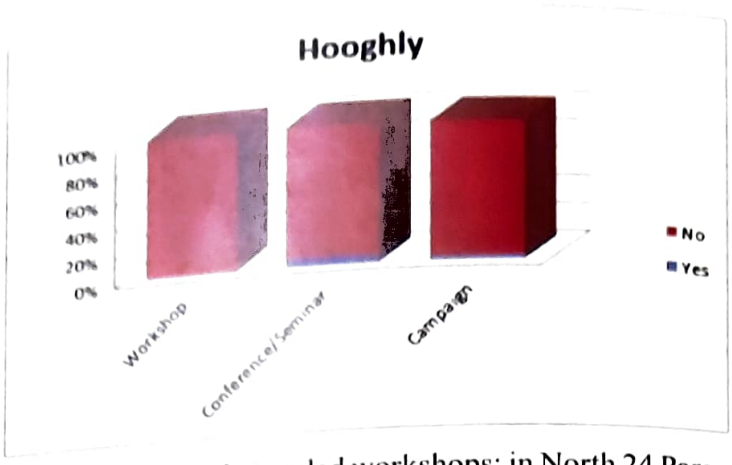


Figure No. 11: Attendance in Workshops, Seminars/Conferences and Campaigns of Respondents of Hooghly District



In Nadia district 3% of respondents had attended workshops; in North 24 Parganas and Hooghly no one had attended any workshop and in South 24 Parganas 4% of respondents had attended workshops. On detailed questioning it was found out that all respondents who had attended workshops had attended the Training Workshop on Environmental Biotechnology organized by ENVIS Centre on Environmental Biotechnology. The workshop was sponsored by the Ministry of Environment and Forests, Government of India and was hosted by University of Kalyani in 2003. Seminars and Conferences on GM foods and crops were attended by 18% of respondents from Nadia; 36% of respondents from North 24 Parganas; 21% of respondents from South 24 Parganas and 5% of respondents from Hooghly. On detailed questioning it was found out that some of them had attended the Agri-Biotechnology—Opportunity and Challenges Seminar of 2007 organized by the Associated Chamber of Commerce and Industry of India in association with the Merchant's Chamber of Commerce; some others had attended the Seminar at Paribesh Bhawan, Bidhan Nagar in 2007 which had focused on Awareness Generation on Biosafety Regulations With Regard to Field Trials of Transgenic Crops that had been jointly organized by the Biotech Consortium of India Ltd; Department of Biotechnology, Government of West Bengal and the Department of Environment, Government of West Bengal. A few others had attended a Seminar on Merits and Demerits of GM Crop Introduction in the State in September 2007 that was organized by SATSA while some others attended the 2008 Seminar on GM crops held at Nadia Zilla Parishad also by SATSA.

7% of respondents from the Nadia district; 2% of respondents from North 24 Parganas; 3% of respondents from Hooghly had attended GM related Campaigns. No one from South 24 Parganas had attended any campaign. Most of the respondents who had attended a campaign stated that they had participated in the protest march against BRAI Bill in 2011, while a few others had participated in online campaigns on Facebook and Twitter by Green peace and Navdanya.

Out of a total of 400 respondents, 188 stated that they were not aware of any NGO or Social Advocacy group working with GM foods and crops. The 212 respondents who were aware of organizations working with GM foods and crops listed some issues which they thought that the organizations were focusing on with regard to GM foods and crops. The responses are summarized in the following table:

Table No 2A: Issues Raised by NGOs/ Social Advocacy Groups

Issues	Number of Respondents
Demand for Moratorium on GM Field Trials	107
Generic Anti-GM Sentiments or Demands	69
Pressure on/ Support for GM Free Regions	4
Discussion of Health Risks of GMOs	3
Demands for Increased GMO Regulations6Miscellaneous	23

It was observed that the majority of respondents stated that the major issue raised by new media, NGOs / Social Advocacy groups is the demand for moratorium on GM field trials. They considered this a popular issue primarily because they felt that the media covers this demand the most.

The 212 respondents were asked who they thought were the target groups that the new media, NGOs / advocacy groups focused on in their awareness drives. The responses are summarized below.

Table No 2B: Target Group of New Media, NGOs / Social Advocacy Groups

Target Group	Number of Respondents
Farmer	127
Consumer	49
General Public	36

Majority of the respondents were of the opinion that the target group that NGOs and advocacy groups focused on for awareness drives and for influencing were the farmers. This group is usually

ocused on because they are considered the primary stakeholders in the GM debate since they are
he potential producers of GM crops and food.

Conclusion

t can thus be concluded that the majority of the sample population have some idea or information
bout GM technology and its application in food production. The general public gives credit to
ources like the internet, journals, community members and the like for information dissemination
n GM. NGOs and advocacy groups are considered to be sources of information but they are not
onsidered to be vital enough. Though the general public strongly agrees that NGOs and advocacy
roups can play a vital role in affecting GM related government policy. Majority of the general
ublic also strongly agrees that NGOs and advocacy groups can play an important role in
influencing public sentiment as such organizations are trusted more than the media or the
government.

The awareness of the general public with regard to knowledge about NGOs and advocacy groups
working with GM foods and crops is low. Out of a total of 400 respondents, 188 are unaware. The
212 respondents, who are aware, know more about global and national level NGOs and advocacy
groups. The local group SATSA as cited by respondents from Nadia, South and North 24 Parganas is
an organization under the aegis of the State Department of Agriculture, Government of West Bengal
and hence is not an NGO. Earth care books as cited by respondents from Hooghly is again not an
NGO and can be called an advocacy group since it publishes and distributes books on
environmental issues and sustainable development. Barasat Anweshan is an NGO working in the
agricultural sector and DRCSC is an NGO working with food and livelihood security issues of the
rural poor. Though YUVA is a local advocacy group yet the main focus of this group is youth
empowerment.

It can also be seen that the workshops, conferences and seminars attended by the respondents were
all organized by governmental bodies and NGOs played no major role. The most popular campaigns
with regard to GM were organized by national and global level NGOs like Green peace and
Navdanya but these campaigns were mostly online in nature. According to the general public,
NGOs and advocacy groups working with GM foods and crops primarily focus on demanding
moratorium on field trials and focus on farmer groups specifically for awareness raising drives.
Thus it can be concluded that the general public is of the opinion that NGOs and social advocacy
groups in the listed districts of West Bengal play no major role in raising awareness among the
general public. These groups rather act as pressure groups, pushing the government to take
measures to regulate biotechnological innovations and practices in the State.

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