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Press Release

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PEOPLES' PERCEPTIONS ABOUT GM CROPS AND FOODS

Report of a three year multi agency research study led by Dr Suman Sahai , Gene Campaign and Prof E Haribabu, University of Hyderabad.

As public controversy grows around GM crops, countries have made attempts to study the underlying reasons for the acceptance/rejection of this technology by the public. There is a reasonable understanding of the attitudes and perceptions to GMOs in developed countries where studies are ongoing, but not so in developing countries.

Until now, there has not been a single authentic, scientific study assessing the public's attitude to agricultural biotechnology in India.

In order to gain an understanding of the Attitudes and Perceptions towards GMOs in India, Gene Campaign and the University of Hyderabad , along with research partners undertook a systematic public perception study on GMOs. The overall goal of this *first ever study in India* is to contribute towards formulation of a meaningful and transparent public policy around biotechnological innovations in India, which takes into account public perceptions and attitudes. It should be seen as the first effort in an ongoing process of longer term monitoring of attitudes to agricultural biotechnology, tracking changes in such perceptions and attitudes over time and assessing public acceptance/ rejection of new biotechnology products.

Research methodology

The research was conducted in 5 states, Andhra Pradesh, Maharashtra, Punjab, Jharkhand and Assam, spreading the samples across north, south, east, west and northeast India, to make it representative. Andhra Pradesh and Maharashtra have been cultivating Bt cotton since 2002-2003 so are exposed to GM technology. Jharkhand and Assam do not cultivate cotton and hence have no exposure to GM technology. Punjab considered the quintessential

“agriculture state” of the country, known for its early adoption of the green revolution and intensive agriculture practices, has both Bt cotton and non cotton growing regions.

The research aimed to study the perceptions of **farmers** and **consumers** (and other stakeholders) to GM crops and foods. Over 800 farmers were studied per state leading to a total sample size of over **4050 farmers**.

Consumer responses were studied in one city per state : 500 consumers each in Hyderabad , Nagpur , Chandigarh, Ranchi and Jorhat were evaluated for their perceptions , leading to a sample size of over **2500 consumers**.

In addition to the quantitative study, qualitative studies were also conducted using established social science methodologies to gain further insights.

The research team was led by Dr Suman Sahai and Prof Haribabu, supported by Mr. Bhaskar Mahanta (North East Centre for Rural Livelihood Research), Dr. B K D Raja (Samaj Vikas, Hyderabad) , Prof Ajay Dandekar (IRMA) , Prof. Ramesh Sharan (Ranchi University) Prof Amrit Srinivasan, Ms Geet Lamba and Mr Kuldeep Singh (PAEDIA and Punjab University), Mr Ranjit Singh (Bhasha Research and Publication Center, Gandhinagar)

To keep out the contentious vocabulary of ‘GM’ from the study, we presented approximations of GM crops to get at really basic attitudes and perceptions to unconventional and novel crops and foods as is presented by GM crops.

GM crops and foods were presented as crops and foods that were different to conventional crops and food because they had been changed in some fundamental way. 'GM" seeds were presented as new varieties of seeds produced by a process which could introduce parts of plants, animals or insects to provide some useful attribute such as improved nutrition or better ability to fight pests and control weeds.

Herbicide tolerant crops (GM crops that can withstand application of herbicides that will kill surrounding flora) and which are promoted as facilitating weed control, were assessed using indirect questions like whether farmers would use seeds that required chemicals that were effective herbicides and would control weeds effectively, but would also destroy surrounding vegetation.

To assess if people would like to eat GM foods, we asked whether they would eat food that was cultivated from new types of seeds in the development of which parts of animals or insects had been used.

Research Highlights – Farmers

- Most farmers are more willing to cultivate cash crops with modified seed than they are to cultivate food crops with such seed. Attitude to food is conservative, there is a sacredness attached to food. Most farmers are not very willing to cultivate food crops with seed they perceive as not natural, neither are they very willing to eat such food.
- About 40% of the farmers studied said they would be willing to cultivate cash crops with modified seed. But 80 % of the farmers said they would not cultivate food crops from seeds containing a poison to control pests. The response was consistent across big and small farmers and educated and uneducated farmers.
- Soil fertility and high yield are very highly valued by farmers, as is biodiversity. The farmer is not willing to sacrifice these for other benefits offered by a technology, for instance better pest and weed control or reduction in use of pesticides.
- Half the farmers admit pesticides only partly control pests but most (70%) farmers do not want pesticides that will control all pests but negatively affect soil fertility.
- About 80- 90% of farmers said they would not use technology (HT seeds) that allowed the use of chemicals to control all weeds effortlessly but also destroyed surrounding flora (medicinal plants, fodder plants, leafy greens etc) . Farmers were

also not inclined to cultivate crops with seeds that would not allow mixed cropping. This is not surprising since rural and farming communities in India use biodiversity in a number of ways. “Weeds” are not useless plants. They constitute either leafy green vegetables for the family or green fodder for the livestock that the family keeps. Surrounding flora also yields the valuable medicinal plants on which the community depends for health and veterinary care.

- The perception that food grown from seed that is ‘modified’ with animal or insect parts is different to food grown from other, normal seed, is seen across all age groups and educational status. This kind of food is viewed as “tampered”, not natural and not desirable. Farmers across the board rejected food that may be nutritious if it was grown from ‘modified’ or ‘tampered’ seed. The arguments of scientists and proponents of GM technology who argue that DNA is the same everywhere and for instance, insect DNA is no different to other DNA, will have to acknowledge the perception of people who make this distinction ! Policy makers must be sensitive to the findings that food grown from seed that is viewed as “modified” in some fundamental way may not be acceptable to rural communities. Going only by the “science based evidence” approach clearly does not take on peoples’ concern especially in an agrarian society like India with deep seated cultural and religious connotations about food.
- A section of food insufficient farmers (very small land holdings or landless) said they would not be averse to eating food grown from modified seed since they often eat substandard food. It would be cynical to construe this as acceptance of food they also consider ‘tampered’.
- Most farmers however, across all ages and education levels said they would never offer such ‘modified’ food in temples or use it at religious ceremonies and festivals; they would also not serve such food at their daughter’s wedding feast ! The cultural embededness and conservatism associated with food is clearly demonstrated here. There is a lesson for policy makers here.
- There were interesting revelations about the agencies that farmers trust. Government was found to be the most trusted source of information and materials. The majority of farmers (87.3 per cent) across all age and education groups trusted the government more than any other institution. Seed dealers come next and scientists come third, followed by the media. The least trusted source of information were found to be the NGOs.
- In the same vein, farmers said they would take the advice of government agencies and seed dealers on selecting seed and other inputs but not of NGOs or university scientists.
- Farmers said that the government and scientists must regulate and monitor new technologies.
- The high trust in government is found across all age groups and levels of education.
- Equally the distrust of NGOs is also seen across age groups and levels of education. Scientist seem to have lost the link with farmers. There is no extension system and scientists from agricultural universities in the region seldom go to the field. For the farmer, the scientist has lost the pre eminent position he enjoyed during the days of the green revolution.

Research Highlights – Consumers

- Awareness about GM crops and foods is very low among urban consumers. Even among the middle class which is educated and exposed to the media, internet and sources of information, about 80 per cent of the consumers studied had not heard of GM food.

- The study found that most consumers are not clear about what exactly GM foods are or how they are produced . Consumers have not heard much either about the risks or the benefits associated with GM foods.
- Consumers are actively aware that they must have the right to chose their food and feel they have these rights.
- Most consumers felt strongly that not enough information is available about the risks and benefits of GM foods and that much more research is needed.
- Consumers overwhelmingly thought that they did not benefit from GM foods but that companies were the prime beneficiaries.
- There is confusion about whether GM foods are labeled or not in India. Some consumers said they were, others thought they were not.
- Consumers thought that 'large' vegetables like tomatoes and cauliflowers were GM. They said these were not natural and were tasteless. Consumers also mentioned in many places that the ready to eat boiled corn dishes sold in the market were American and GM.
- Consumers place the highest priority on the safety of the food, followed by nutrition and taste in that order. Any modification that would affect safety of the food would not be acceptable to most.
- As seen in the case of farmers, consumers trust the government most as a source of information and materials, like farmers again, the least trust is placed in NGOs.
- Consumers are clear they want government to have control of regulation and monitoring of new technologies , seeds, etc. The pattern of trust is repeated with government being on top and NGOs at the bottom, with media in between. Scientists are not as distrusted by consumers as they are by the farmers.
- This poor awareness about GM food and how it is produced must be seen in the context of current government policy that is preparing to release GM foods (Bt brinjal) to a population which is uninformed and therefore unable to exercise any kind of choice. Attempts to introduce GM foods into a situation where the majority of the population is not aware of the nature of GM foods nor of their benefits and risks is not democratic or enlightened policy making.

Conclusion

We hope that the outcome of this research will contribute to improved dialogue, and promote rational decision making in the field of Ag biotechnology and GM crops and food. The research findings would be most profitably used if they would help the biotechnology policy development process in the country by taking into account the societal contexts of technology adoption. The perceptions of people and their views on technologies will have to be taken into account if technology adoption is to be rational, unbiased, not promoting any specific stakes but genuinely seeking to strengthen the public interest. We also hope that this study leads to further research to understand how to make technology choices responsive to public needs and public opinions.

The government must be humbled by the trust placed in it by the country's farmers and consumers with respect to agriculture and food technologies. This trust should propel government agencies to be that much more conscientious in discharging their duties and responsibilities as is expected from them, to safeguard the public interest. There is a lesson for the NGO community here that seems to have lost the trust of substantial sections of people in this study . If the NGO community is to recapture some of its relevance for the communities it seeks to serve, it must visibly do things differently, to regain the trust that it seems have lost.

Research Team: Study on Public Attitudes and Perceptions about Genetically Modified Organisms in India

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