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CONSUMERS' PERCEPTIONS ON GOVERNMENT REGULATIONS OF GENETICALLY MODIFIED ORGANISMS

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ABSTRACT

Governments have taken different approaches to assess and manage the risks associated with the use of genetic engineering technology and the development and release of genetically modified organisms (GMO), including genetically modified crops and genetically modified fish. There are differences in the regulation of GMOs between countries, with some of the most marked differences occurring between the USA and Europe. This paper makes an analysis of regulation of genetically modified organisms. It outlines the consumers rating on level of government intervention in regulation of genetically modified organisms in India. This paper makes a special note on government intervention strategies in regulation of genetically modified organisms on the basis of consumers' point of view. This paper concludes with some interesting findings.

KEYWORDS: *genetic engineering, modified crops, crop revolution, ecosystems*

INTRODUCTION

Environmental protection imperatives also argue for a genetically modified crop revolution in India. The current practices of India's poor dryland crop farmers are damaging to rural ecosystems. If genetically modified crops could produce yield gains for these farmers, there would be less need to clear new lands in rural India, plow fragile slopes, or destroy still more habitat. If farmers had insecticidal genetically modified crops they also might escape having to risk their own health, pollute the environment, and kill so many non-target species

as they do now with conventional chemical sprays. Farm chemical use is also a rural economic welfare issue in India, where cotton farmers currently spend 16 billion rupees annually on insecticide sprays. Padmanabhan (2000) reported that vegetable producers in India currently suffer a \$2.5 billion loss annually to insect damage, even while spending on tomatoes, for example \$100-\$200 per hectare on insecticides.

It could be noted that GM crops could eventually help address some of India's severe nutritional problems as well. Roughly 50,000 children in India go blind every year from vitamin A

deficiency, while iron deficiency is a major threat to the health of women. The possibility of engineering iron-rich rice or vitamin A-rich rapeseed oil would become interesting in this context.

Political leaders as well as scientists and technocrats in India have noticed these opportunities, and they now routinely endorse the potential contributions that biotechnology - including transgenic crops - might make to agricultural productivity growth and poverty reduction in the years ahead.

Many top leaders in India have endorsed the value of agribiotechnology in general, and while scarce treasury resources have even been allocated to promote genetically modified crop research within India's national agricultural research system, India's policies toward genetically modified crops have hardly been promotional across the board. It was the original intent of biotechnology policy leaders in India to pursue an essentially permissive approach toward genetically modified crops, yet this intent has recently been frustrated. Critics of genetically modified crops were able to work within India's open and democratic political system to push for a precautionous or even a preventive approach toward genetically modified crops instead, especially in the area of biosafety policy. Indian biosafety authorities, somewhat like their counterparts in Brazil, ran up against forceful public criticism when they attempted to pursue a permissive approach toward the testing and release of genetically modified crops. As of 2000 this meant that farmers in India, identical to their counterparts in Brazil and Kenya, had not yet been given official permission to plant any genetically modified crops.

The issue of genetically modified crops only adds new complication to this already intense internal debate in India over plant variety IPRs. In 1998, when the Monsanto Company of the United States purchased a 26 percent share of India's own Maharashtra Hybrid Seeds Company Limited (Mahyco), a Monsanto executive was quoted in the Indian press saying. As per the report of *The Economic Times*, New Delhi, April 26, (1998) "We propose to penetrate the Indian agriculture sector in a big way. Mahyco is a good vehicle." Opponents

of transnational corporations within India took this as a direct challenge, and began directing harsh criticism at all of Monsanto's genetically modified crop technologies, especially the "terminator gene" patent it had recently acquired, which was presented as a direct threat to the tradition of seed saving in India.

Gene use restrictions technologies had not yet been inserted into genetically modified crops anywhere let alone the Bt cotton being tried out in India, but this issue made Monsanto and Mahyco easy targets for NGO and opposition party criticism. The mere existence of a terminator gene patent seemed to confirm suspicions that international seed companies were seeking to take away from India's farmers their traditional right to replicate seed on their own farms. In India, 92 percent of all wheat seed planted is home grown, and 88 percent of paddy rice seed. NGOs and globalization critics feared that India's small farmers would be pressured by Monsanto or Mahyco into purchasing expensive GURT seeds, only to discover too late that they had to keep purchasing them year after year.

IPR Policy in India

This Government decision to move toward a conventional plant variety protection law in the context of TRIPS triggered a surprisingly emotional debate in India's Parliament. The first draft of the PVPA was criticized by the private seed industry for being too weak, but NGOs claiming to represent farmers groups warned it was far too strong and would lead to a private expropriation of farmers' rights. Revised drafts were produced in 1996-97 in order to address the farmers rights issue, and Cabinet approval for a revised draft was secured in October 1997, but under still more NGO criticism Parliament continued to stall, and still more redrafting was initiated. The version of the PVPA that was working its way through Parliament in 2000 was a version produced in December 1999.

Some of India's most respected leaders in the area of agricultural research have shared the concern that patent protections for plants, or even a national move toward a conventional PBR system, might leave the nation's poor farmers at a

disadvantage. Rural communities in India have for thousands of years employed their own on-farm seed selection practices to breed a highly diverse stock of plant varieties nicely attuned to local conditions. Under a PBR system, why should IPR protection go only to the professional breeders working either within international companies or national institutes who routinely use these already improved local varieties as the basis for their breeding programs? Dr. M.S. Swaminathan, India's most acclaimed agricultural scientist and the first winner of the World Food Prize, has helped popularize the notion that communities of farmers are as entitled to IPR protections for their efforts as professional breeders. Largely in response to his leadership, and as early as 1989, the FAO Conference in Rome adopted his concept of Farmers Rights.

METHODS AND MATERIALS

This paper examines the consumers rating on government intervention in regulation of genetically modified organisms. In this study samples are selected from the six occupational groups of respondents. They are government employees, private employees, professional business, farmers and wage labour. From each occupational group 50 respondents are selected sample under simple random sampling method. In total 200 respondents are selected sample under simple random sampling method. The relevant data collected from the teacher respondents with the help of interview scheduled method. The questions relating to government intervention in regulation of genetically modified organisms are collected from the respondents with the help of 5 point rating scale. The data interpretation is done with the help of average analysis, ANOVA two way method and t test.

GOVERNMENT INTERVENTION IN REGULATION OF GENETICALLY MODIFIED ORGANISMS

This section deals with respondents' rating on government intervention towards genetically modified organisms. It can be assessed with the help of 15 factors on a 5 point rating scale. These include the government listens to what ordinary people think about GM food, the government provides all relevant information about GM food to the public, the government withdraws its support to GM food cultivation by respecting the sentiments and feelings of the farmers, the government distorts facts in its favour regarding GM food, the government does not impose the farmers in cultivation of GM food, the government follows biosafety regulations in conducting research on genetically modified organisms, the government is too influenced by the biotechnology industry regarding GM food, the government is doing a good job with GM food, the government influenced by multinational companies towards introduction of genetically modified organisms, the government respects the feelings and sentiments of farmers in introduction of genetically modified plants, the government changes policies regarding GM food as per the desire of the consumers, the government listens to concerns about GM food raised by the public, the government has withdrawn some of the GMO policies consequent upon severe opposition from the farmers and the general public, the government takes fair decision on GM food and the government is competent enough to deal with GM food .

Table 1 Occupation Wise Respondents' Rating on Government Intervention in Regulation of Genetically Modified Organisms

Variables	Government employees	Private employees	Professional	Business	Farmers	Wage labour	Mean
The government is competent enough to deal with GM food	2.23	2.10	2.00	1.92	1.88	1.81	1.99
The government is doing a good job with GM food	3.35	3.22	3.08	2.94	2.80	2.67	3.01
The government distorts facts in its favour regarding GM food	4.11	3.98	3.84	3.70	3.56	3.43	3.77
The government change policies regarding GM food as per the desire of the consumers	2.93	2.80	2.66	2.52	2.38	2.25	2.59
The government does not impose the farmers in cultivation of GM food	3.84	3.71	3.57	3.43	3.29	3.16	3.50
The government withdraws its support to GM food cultivation by respecting the sentiments and feelings of the farmers	4.15	4.10	3.96	3.82	3.70	3.61	3.89
The government is too influenced by the biotechnology industry regarding GM food	3.55	3.42	3.28	3.14	3.00	2.87	3.21
The government listens to concerns about GM food raised by the public	2.82	2.69	2.55	2.41	2.27	2.14	2.48
The government listens to what ordinary people think about GM food	4.21	4.13	4.10	4.06	4.00	3.98	4.12
Government takes fair decision on GM food	2.52	2.39	2.20	2.11	2.03	1.94	2.18
The government provides all relevant information about GM food to the public	4.16	4.13	4.09	4.00	3.86	3.88	4.02
The government respects the feelings and sentiments of farmers in introduction of genetically modified plants	3.06	2.93	2.79	2.65	2.51	2.38	2.72
The government follows biosafety regulations in conducting research on genetically modified organisms	3.68	3.55	3.41	3.27	3.13	3.00	3.34
The government influenced by multinational companies towards introduction of genetically modified organisms	3.21	3.08	2.94	2.80	2.66	2.53	2.87
The government has withdrawn some of the GMOI policies consequent upon severe opposition from the farmers and the generally public	2.69	2.56	2.42	2.28	2.14	2.01	2.35
Average	3.37	3.25	3.13	3.00	2.88	2.78	3.07

Source: Computed from the primary data

ANOVA

Source of Variation	SS	df	MS	F	F crit
Variation due to government intervention in regulation of GMO	39.30922	14	2.807801	796.8587	1.835683
Variation due to occupational status	3.762432	5	0.752486	213.5569	2.345586
Error	0.246651	70	0.003524		
Total	43.3183	89			

Data presented in table 1 indicate the occupation wise respondents' rating on government intervention in regulation of genetically modified organisms. It could be noted that out of the 15 government interventions on genetically modified organisms, the respondents rate the government listens to what ordinary people think about GM food as their first level ranking and it is evident from

their secured a mean score of 4.12 on a 5 point rating scale. The government provides all relevant information about GM food to the public is rated at second level government intervention on genetically modified organisms and it is estimated from the respondents' secured a mean score of 4.02 on a 5 point rating scale. The respondents cite the government intervention on genetically modified

organism in the form of withdrawing its support to GM food cultivation by respecting the sentiments and feelings of the farmers as their third level observed event. It is evident from their secured a mean score of 3.89 on a 5 point rating scale. The respondents rank the fourth level government intervention on genetically modified organisms by citing the fact that government distorts facts in its favour regarding GM food and it is observed from the respondents' secured a mean score of 3.77 on a 5 point rating scale. The government does not impose the farmers in cultivation of GM food is rated at fifth level government intervention in propagation of genetically modified organisms and it could be known from the respondents' secured a mean score of 3.50 on a 5 point rating scale.

The respondents' rate the government follows biosafety regulations in conducting research on genetically modified organisms as their rated sixth level government intervention on genetically modified organisms and it is revealed from their secured a mean score of 3.34 on a 5 point rating scale. The government is too influenced by the biotechnology industry regarding GM food is rated at seventh level government role in developing genetically modified organisms and it observed from the respondents' secured a mean score of 3.21 on a 5 point rating scale. The respondents rate the government intervention on genetically modified organisms by citing the event that the government is doing a good job with GM food and it is their eighth level ranking. It is evident from their secured a mean score of 3.01 on a 5 point rating scale. The respondents hold the ninth level government intervention on genetically modified organisms by citing the fact that government is influenced by multinational companies towards introduction of genetically modified organisms as per their secured a mean score of 2.87 on a 5 point rating scale. The government respects the feelings and sentiments of farmers in introduction of genetically modified plants is rated at tenth level government intervention in regulation of genetically modified organisms and it is evident from the respondents' secured a mean score of 2.72 on a 5 point rating scale.

The respondents' rate the government changes policies regarding GM food as per the desire of the consumers as their eleventh level rated government intervention in regulation of genetically modified organisms and it could be known from their secured a mean score of 2.59 on a 5 point rating scale. The government listens to concerns about GM food raised by the public is rated at twelfth level government intervention in regulation of genetically modified organisms and it is reflected from the respondents' secured a mean score of 2.48 on a 5 point rating scale. The respondents rank the thirteenth level government intervention on genetically modified organisms by citing the fact that the government has withdrawn some of the GMO policies consequent upon severe opposition from the farmers and the general public. It is evident from their secured a mean score of 2.35 on a 5 point rating scale.

Government takes fair decision on GM food is rated at fourteenth level government intervention on genetically modified organisms and it is reflected from the respondents' secured a mean score of 2.18 on a 5 point rating scale. The respondents rank the fifteenth level government intervention on genetically modified organisms by citing the fact that the government is competent enough to deal with GM food. It is evident from their secured a mean score of 1.99 on a 5 point rating scale.

The government employee respondents' rank the first positions in their overall rated government interventions in regulation of genetically modified organisms as per their secured a mean score of 3.37 on a 5 point rating scale. The private employee respondents' record the second position in their overall rated government intervention in regulation of genetically modified organisms and it is known from their secured a mean score of 3.25 on a 5 point rating scale. The professional respondents' register the third position in their overall rated government intervention towards regulating the genetically modified organisms and it is computed from their secured a mean score of 3.13 on a 5 point rating scale. The business group respondents' record the fourth position in their overall rated government intervention in regulation

of genetically modified organisms and it is known from their secured a mean score of 3.00 on a 5 point rating scale. The farm household respondents' register the fifth position in their overall rated government intervention in regulation of genetically modified organisms and it is computed from their secured a mean score of 2.88 on a 5 point rating scale. The wage labour respondents' come down to the last position in their overall rated government intervention in regulation of genetically modified organisms and it is estimated from their secured a mean score of 2.78 on a 5 point rating scale.

The anova two way model is applied for further discussion. The computed anova value 796.85 is greater than its tabulated value at 5 percent level significance. Hence, the variation among the overall rated government intervention towards regulation of genetically modified organisms is statistically identified as significant. In another point, the computed anova value 213.55 is greater than its tabulated value at 5 percent level significance. Hence, the variation among the occupational groups is statistically identified as significant as per the respondents rating on government intervention towards genetically modified organisms.

Table 2 Education Wise Respondents' Rating on Government Intervention in Regulation of Genetically Modified Organisms

Variables	Primary	Secondary	Higher Secondary	Under graduate	Post graduate	Mean
The government is competent enough to deal with GM food	1.74	1.76	1.97	2.12	2.36	1.99
The government is doing a good job with GM food	2.46	2.68	2.79	3.34	3.78	3.01
The government distorts facts in its favour regarding GM food	3.33	3.54	3.75	4.10	4.14	3.77
The government change policies regarding GM food as per the desire of the consumers	2.04	2.26	2.37	2.92	3.36	2.59
The government does not impose the farmers in cultivation of GM food	3.12	3.20	3.35	3.83	4.00	3.50
The government withdraws its support to GM food cultivation by respecting the sentiments and feelings of the farmers	3.54	3.67	3.97	4.12	4.16	3.89
The government is too influenced by the biotechnology industry regarding GM food	2.66	2.88	2.99	3.54	3.98	3.21
The government listens to concerns about GM food raised by the public	1.93	2.15	2.26	2.81	3.25	2.48
The government listens to what ordinary people think about GM food	3.98	4.06	4.19	4.18	4.20	4.12
Government takes fair decision on GM food	1.93	1.95	2.14	2.36	2.50	2.18
The government provides all relevant information about GM food to the public	3.87	3.89	4.10	4.14	4.19	4.02
The government respects the feelings and sentiments of farmers in introduction of genetically modified plants	2.17	2.39	2.50	3.05	3.49	2.72
The government follows biosafety regulations in conducting research on genetically modified organisms	2.79	3.01	3.12	3.67	4.11	3.34
The government influenced by multinational companies towards introduction of genetically modified organisms	2.32	2.54	2.65	3.20	3.64	2.87
The government has withdrawn some of the GMOI policies consequent upon severe opposition from the farmers and the generally public	1.91	2.02	2.13	2.68	3.01	2.35
Average	2.65	2.80	2.95	3.34	3.61	3.07

Source: Computed from the primary data

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>F crit</i>
Variation due to government intervention in regulation of GMO	33.59123	14	2.399373	78.91872	1.872588
Variation due to education	9.382467	4	2.345617	77.15059	2.536579
Error	1.702573	56	0.030403		
Total	44.67627	74			

Table 2 presents data on the education wise respondents' rating on government intervention in regulation of genetically modified organisms. The post graduate degree level educated respondents rank the first position in their overall rated government role in regulation of genetically modified organisms and it is evident from their secured a mean score of 3.61 on a 5 point rating scale. The under graduate degree level educated respondents record the second position in their overall ranked government intervention in regulation of genetically modified organisms and it is revealed from their secured a mean score of 3.34 on a 5 point rating scale. The higher secondary level educated respondents register the third position in their overall observed government intervention in regulation of genetically modified organisms and it is reflected from their secured a mean score of 2.95 on a 5 point rating scale. The secondary level educated respondents occupy the fourth position in their overall experienced government intervention towards regulating the genetically modified

organisms and it is reflected from their secured a mean score of 2.80 on a 5 point rating scale. The primary level educated respondents come down to the last position in their overall rated government intervention in regulation of genetically modified organisms and it is estimated from their secured a mean score of 2.65 on a 5 point rating scale.

The anova two way model is applied for further discussion. The computed anova value 78.91 is greater than its tabulated value at 5 percent level significance. Hence, the variation among the overall rated government interventions in regulation of genetically modified organisms is statistically identified as significant. In another point, the computed anova value 77.15 is greater than its tabulated value at 5 percent level significance. Hence, the variation among the educational groups is statistically identified as significant as per the respondents rating on government intervention in regulation of genetically modified organisms.

Table 3 Caste Wise Respondents' Rating on Government Intervention in Regulation of Genetically Modified Organisms

Variables	Forward caste	Backward caste	Most backward caste	Scheduled caste	Mean
The government is competent enough to deal with GM food	2.22	2.07	1.84	1.81	1.99
The government is doing a good job with GM food	3.74	2.89	2.71	2.49	3.01
The government distorts facts in its favour regarding GM food	4.10	3.85	3.57	3.36	3.77
The government change policies regarding GM food as per the desire of the consumers	3.32	2.47	2.29	2.07	2.59
The government does not impose the farmers in cultivation of GM food	3.96	3.45	3.23	3.15	3.50
The government withdraws its support to GM food cultivation by respecting the sentiments and feelings of the farmers	4.12	4.07	3.70	3.57	3.89
The government is too influenced by the biotechnology industry regarding GM food	3.94	3.09	2.91	2.69	3.21
The government listens to concerns about GM food raised by the public	3.21	2.36	2.18	1.96	2.48
The government listens to what ordinary people think about GM food	4.16	4.29	4.09	4.01	4.12
Government takes fair decision on GM food	2.36	2.24	2.03	1.99	2.18
The government provides all relevant information about GM food to the public	4.15	4.20	3.92	3.90	4.02
The government respects the feelings and sentiments of farmers in introduction of genetically modified plants	3.45	2.60	2.42	2.20	2.72
The government follows biosafety regulations in conducting research on genetically modified organisms	4.07	3.22	3.04	2.82	3.34
The government influenced by multinational companies towards introduction of genetically modified organisms	3.60	2.75	2.57	2.35	2.87
The government has withdrawn some of the GMOI policies consequent upon severe opposition from the farmers and the generally public	2.48	2.33	2.24	2.14	2.35
Average	3.53	3.06	2.85	2.70	3.07

Source: Computed from the primary data

ANOVA

Source of Variation	SS	df	MS	F	F crit
Variation due to government intervention in regulation of GMO	27.45324	14	1.960946	46.16335	1.935009
Variation due to caste status	5.808432	3	1.936144	45.57948	2.827049
Error	1.784093	42	0.042478		
Total	35.04577	59			

Table 3 presents data on the caste wise respondents' rating government intervention in regulation of genetically modified organisms. The forward caste respondents rank the first position in

their overall revealed government intervention towards regulating the genetically modified organisms and it is evident from their secured a mean score of 3.53 on a 5 point rating scale. The

backward caste respondents' record the second position in their overall rated government intervention in regulation of genetically modified organisms and it is learnt from their secured a mean score of 3.06 on a 5 point rating scale. The most backward caste respondents register the third position in their overall reflected government intervention in regulation of genetically modified organisms and it is revealed from their secured a mean score of 2.85 on a 5 point rating scale. The schedule caste respondents come down to the last position in their overall observed government intervention in regulation of genetically modified

organisms as per their secured a mean score of 2.70 on a 5 point rating scale.

The anova two ways model is applied for further discussion. The computed anova value 46.16 is greater than its tabulated value at 5 percent level significance. Hence, the variation among the overall government intervention in regulation of genetically modified organisms is statistically identified as significant. In another point, the computed anova value 45.57 is greater than its tabulated value at 5 percent level significance. Hence, the variation among the caste groups is statistically identified as significant as per the respondents rating on government attitudes towards genetically modified organisms.

Table 4 Age Wise Respondents' Rating on Government Intervention in Regulation of Genetically Modified Organisms

Variables	Below 30 years	30-40 years	40-50 years	50-60 years	Mean
The government is competent enough to deal with GM food	2.18	2.05	2.03	1.80	1.99
The government is doing a good job with GM food	3.50	3.17	2.85	2.52	3.01
The government distorts facts in its favour regarding GM food	4.02	3.93	3.65	3.48	3.77
The government change policies regarding GM food as per the desire of the consumers	3.08	2.75	2.43	2.10	2.59
The government does not impose the farmers in cultivation of GM food	3.99	3.66	3.34	3.01	3.50
The government withdraws its support to GM food cultivation by respecting the sentiments and feelings of the farmers	4.18	4.05	3.73	3.60	3.89
The government is too influenced by the biotechnology industry regarding GM food	3.70	3.37	3.05	2.72	3.21
The government listens to concerns about GM food raised by the public	2.87	2.64	2.32	2.09	2.48
The government listens to what ordinary people think about GM food	4.21	4.20	4.16	3.91	4.12
Government takes fair decision on GM food	2.47	2.34	2.02	1.89	2.18
The government provides all relevant information about GM food to the public	4.11	4.18	4.06	3.73	4.02
The government respects the feelings and sentiments of farmers in introduction of genetically modified plants	3.21	2.88	2.56	2.23	2.72
The government follows biosafety regulations in conducting research on genetically modified organisms	3.83	3.50	3.18	2.85	3.34
The government influenced by multinational companies towards introduction of genetically modified organisms	3.36	3.03	2.71	2.38	2.87
The government has withdrawn some of the GMOI policies consequent upon severe opposition from the farmers and the generally public	2.74	2.51	2.19	1.96	2.35
Average	3.43	3.22	2.95	2.68	3.07

Source: Computed from the primary data

ANOVA					
Source of Variation	SS	df	MS	F	F crit
Variation due to government intervention in regulation of GMO	26.45164	14	1.889403	131.1941	1.935009
Variation due to age structure	4.705633	3	1.568544	108.9147	2.827049
Error	0.604867	42	0.014402		
Total	31.76214	59			

Table 4 presents data on the age wise respondents' rating on government intervention in regulation of genetically modified organisms. The respondents belong to the age group below 30 years rank the first position in their overall revealed government intervention towards regulating the genetically modified organisms and it is evident from their secured a mean score of 3.43 on a 5 point rating scale. The respondents put in the 30-40 years group register the second position in their overall rated intervention in regulation of towards genetically modified organisms and it is learnt from their secured a mean score of 3.22 on a 5 point rating scale. The respondents belong to the age group of 40-50 years register the third position in their overall reported government intervention in regulation of genetically modified organisms and it is revealed from their secured a mean score of 2.95

on a 5 point rating scale. The respondents come under the age group in the range of 50-60 years come to the last position in their overall observed government intervention in regulation of genetically modified organisms as per their secured a mean score of 2.68 on a 5 point rating scale.

The anova two ways model is applied for further discussion. The computed anova value 131.19 is greater than its tabulated value at 5 percent level significance. Hence, the variation among the overall government intervention in regulation of genetically modified organisms is statistically identified as significant. In another point, the computed anova value 108.91 is greater than its tabulated value at 5 percent level significance. Hence, the variation among the age groups is statistically identified as significant as per the respondents rating on government intervention in regulation of genetically modified organisms.

Table 5 Sex Wise Respondents' Rating on Government Intervention in Regulation of Genetically Modified Organisms

Variables	Male	Female	Mean
The government is competent enough to deal with GM food	2.13	1.85	1.99
The government is doing a good job with GM food	3.25	2.77	3.01
The government distorts facts in its favour regarding GM food	4.01	3.53	3.77
The government change policies regarding GM food as per the desire of the consumers	2.83	2.35	2.59
The government does not impose the farmers in cultivation of GM food	3.74	3.26	3.50
The government withdraws its support to GM food cultivation by respecting the sentiments and feelings of the farmers	4.13	3.65	3.89
The government is too influenced by the biotechnology industry regarding GM food	3.45	2.97	3.21
The government listens to concerns about GM food raised by the public	2.72	2.24	2.48
The government listens to what ordinary people think about GM food	4.16	4.04	4.12
Government takes fair decision on GM food	2.32	2.04	2.18
The government provides all relevant information about GM food to the public	4.16	3.88	4.02
The government respects the feelings and sentiments of farmers in introduction of genetically modified plants	2.96	2.48	2.72
The government follows biosafety regulations in conducting research on genetically modified organisms	3.58	3.10	3.34
The government influenced by multinational companies towards introduction of genetically modified organisms	3.11	2.63	2.87
The government has withdrawn some of the GMOI policies consequent upon severe opposition from the farmers and the generally public	2.59	2.11	2.35
Average	3.28	2.86	3.07

Source: Computed from the primary data

T Statistical Value 13.89, df 14, T Critical Value 1.76

Data presented in table 5 indicate the sex wise respondents' rating on government intervention in regulation of genetically modified organisms. The male respondents' ranks the first position in their overall rated government intervention in regulation of genetically modified organisms as per their secured a mean score of 3.28 on a 5 point rating scale. The female respondents hold the second position in their overall rated government intervention in regulation of genetically modified organisms as per their secured a mean score of 2.86 on a 5 point rating scale.

The T test is applied for further discussion. The computed t value 13.89 is greater than its tabulated value at 5 per cent level significance. Hence there is a significant difference between male respondents and female respondents in their overall rated government intervention in regulation of genetically modified organisms.

CONCLUSION

It could be seen clearly from the above discussion that the respondents' rate the high level government intervention towards regulating the genetically modified organisms by citing the facts that the government listens to what ordinary people think about GM food, the government provides all relevant information about GM food to the public, the government withdraws its support to GM food cultivation by respecting the sentiments and feelings of the farmers, the government distorts facts in its favour regarding GM food and the government does not impose the farmers in cultivation of GM food as per their secured a mean score above 3.50 on a 5 point rating scale. The respondents' rate the moderate level government intervention in regulation of genetically modified organisms by stating the facts that the government follows biosafety regulations in conducting research on genetically modified

organisms, the government is too influenced by the biotechnology industry regarding GM food, the government is doing a good job with GM food, the government is influenced by multinational companies towards introduction of genetically modified organisms, the government respects the feelings and sentiments of the farmers in introduction of genetically modified plants and the government changes policies regarding GM food as per the desire of the consumers as per their secured a mean score in the range of 2.50 to 3.50 on a 5 point rating scale. The respondents' rate the low level government intervention in regulation of genetically modified organisms by indicating the facts that the government listens to concerns about GM food raised by the public, the government has withdrawn some of the GMOI policies consequent upon severe opposition from the farmers and the general public, government takes fair decision on GM food and the government is competent enough to deal with GM food as per their secured a mean score below 2.50 on a 5 point rating scale. It could be observed that the government employee respondents' rank the first position in their rated overall government intervention in regulation of genetically modified organisms, private employee respondents' the second, professional respondents' the third, business doing respondents' the fourth, farm household respondents' the fifth and wage labour respondents' the last. The result of education wise analysis reveals that the post graduate degree level educated respondents rank the first position in their overall rated government intervention in regulation of genetically modified organisms, under graduate degree level educated respondents' the second, higher secondary level educated respondents' the third, secondary level educated respondents' the fourth and primary level educated respondents' the last. The result of caste wise analysis indicates that the forward caste respondents rank the first position in their overall revealed government intervention in regulation of genetically modified organisms, backward caste respondents' the second, most backward caste respondents' the third and scheduled caste respondents' the last. The result of age wise analysis shows that the respondents

belong to the age group below 30 years rank the first position in their overall revealed government intervention in regulation of genetically modified organisms, respondents of 30-40 years group the second, respondents of 40-50 years group the third and respondents of 50-60 years group the last. The result of gender wise analysis reveals that the female respondents lag behind the male respondents in their overall rated government intervention in regulation of genetically modified organisms.

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