Research Article

Indian Journal of Extension Education
Vol. 58, No. 3 (July–September), 2022, (147-150)

ISSN 0537-1996 (Print)
ISSN 2454-552X (Online)

Effect of Personal Characteristics of Respondents on their Perception towards Over-exploitation of Water Resources

Shubham[1]*, Rati Mukteshawar[2], Anil Kumar Rohila[2], Joginder Singh Malik[3], Amit Kumar[4] and Rohtash Kumar[5]

[1,5]Research Scholar, [2]Assistant Professor, [3]Professor, Department of Extension Education, CCS HAU, Hisar-125004, Haryana, India
[4]Assistant Professor, Jagan Nath University, Bahadurgarh-124507, Haryana, India
Corresponding author email id: shubham21334@gmail.com

ARTICLE INFO

Keywords: Correlated, Over-exploitation, Perception, Respondents, Water resources

http://doi.org/10.48165/IJEE.2022.58330

ABSTRACT

The study was carried out in the purposively selected five districts of Haryana state due to intensive agricultural practices followed in these districts. Mainly rice-wheat cropping pattern was followed in selected districts along with sugarcane and maize. The objective of this study was to know the relationship of personal characteristics of respondents with perception towards the over-exploitation of water resources. The data were collected from 150 respondents comprising 15 respondents from randomly selected ten villages through a well-prepared interview schedule. Age, education, land holding, mass media exposure, and extension contact were significantly correlated with the perception of respondents. Age was negatively correlated while, education, land holding, mass media exposure, and extension contact were positively correlated with perception of respondents and the independent variables in the regression equation jointly explained the variation of 22.70 percent. There is a need to organize awareness campaign and trainings to develop the favorable perception towards over-exploitation of water resources.

INTRODUCTION

Agriculture plays an important role in India's political and social economy. India is one of the world's top producers of agricultural products, so the long-term viability of its agricultural sector is crucial. While the majority of India's agricultural production chains are small-scale, they account for around 20 per cent of the India's GDP and employ the majority of work force of country (GOI 2014 & FAO, 2015). In the early 1960s, India was dependent on imports from foreign countries to fulfil local food requirements, so India could no longer depend on the foreign assistance and imports which were required to ensure the food security of the nation. That was backed more by the green revolution in India that resulted in a decision to the introduction of high-yielding varieties, disease-resistant varieties, and improved agricultural tools and techniques to raise productivity. During the green revolution, farmers had adopted rice and wheat cultivation mainly due to its profitability but it resulted in excessive use of groundwater resources. In 1966s, Haryana had about 1.92 lakh hectares of area under paddy cultivation, which was increased to 14.47 lakh hectares by the end of 2020 which leads to drastic decreases in water availability (GOI, 2020).

Perception is the process through which an individual becomes aware of the objects and events taking place around him/her or the way in which sensory information is organized, analysed and experienced which involves both bottom up and top-down planning. In bottom up, the sensory inputs are used to develop perceptions and in top-down planning, our prior information, experiences, and thoughts affect how we interpret those sensations (Lumen learning). A person's perception determined by him or her awareness about any ideas or object, as well as their acceptance, adoption, and rejection. Perception has also association with all other criteria related to idea or object. The psychological object can be a symbol, statement, slogan, individual, organization, theory, idea or invention

Received 10-06-2022; Accepted 20-06-2022

towards which people may have different view on whether it has a positive or negative impact (Kumar et al., 2021).

Water scarcity has become a major worldwide problem, particularly for rural areas that are dependent on rainfall for agriculture. Irrigation water resources over-exploitation has resulted into drastic declines of groundwater levels and putting water resources out of reach for a large number of small and marginal farmers (Kumar et al., 2021). According to U.P. Singh, Secretary, Ministry of Water Resources states that "if remedial steps are not taken, the great scarcity of water availability may capture many parts of country in upcoming years." Many blocks in Haryana may completely run out of water, not just for irrigation, but even for drinking purposes in the next 15 to 20 years. So, keeping in view the main facts and their relevance, the present study was taken into account to know the relationship between socio-personal characteristics of respondents with their perception towards over exploitation of water resources.

METHODOLOGY

The study was conducted in five districts of Haryana namely; Ambala, Kaithal, Karnal, Kurukshetra, and Yamunanagar which were selected purposively due to intensive agricultural practices followed in these districts in the year 2020-2021. One block each from each district viz; Ambala-I, Dhand, Nilokheri, Thanesar, and Jagadhri was purposively selected. Further, two villages were selected from each block randomly. In Ambala district, Jansui and Niharsi from Ambala-I block whereas, in Kaithal district, Kaul and Chandlana were selected from Dhand block. In Karnal district, Raison and Karsa from Nilokheri block meanwhile in Kurukshetra district, Kirmich and Hathira from Thanesar block. In Yamunanagar district, Damla and Aurangabad were selected from Jagdhari block. To study the perception of respondents, 15 respondents from each village were selected randomly. As a result, a total of 150 respondents were selected for the study. The data were collected through the personal interview method with the help of a structured interview schedule constructed and then analyzed using Statistical Package for Social Sciences (SPSS) version 23, for computing total score, weighted mean score, correlation, and regression analysis. For assessing the profile of respondents, twelve variables were selected viz; age, education, family type, family size, occupation, land holding, cropping pattern, irrigation facilities, irrigation methods, water conservation structures, mass media exposure, and extension contact. The scores were given for all twelve independent variables to know their relationship with the perception of respondents. To measure the farmers' perception towards over-exploitation of water resources, they were given 30 statement interview schedule and the responses were obtained on a three-point continuum (Likert-type) scale representing agree, undecided, and disagree. So, a score was given against each statement and aggregated total score was calculated, then weighted mean score was calculated accordingly.

RESULTS AND DISCUSSION

Perception of respondents towards over-exploitation of water resources

The results portrayed in Table 1 revealed that most of respondents (71.34%) were having high level of perception towards over-exploitation of water resources followed by 14.66 per cent respondents with medium level of perception towards over-exploitation of water resources. While, only 14.00 per cent respondents had low level of perception towards over-exploitation of water resources.

Table 1. Perception towards over-exploitation towards of water resources

S.No.	Category	Percentage
1	High	71.34
2	Medium	14.66
3	Low	14.00

Item wise analysis of perception of respondents towards over-exploitation of water resources revealed that respondents generally perceive change in ground water availability, mostly farmers stick with rice-wheat cropping pattern and more dependency on ground water. This might explain that most of respondents perceived that there is over-exploitation of water resources in Haryana. Similar results were found by Ankit (2018) during his study in the region of Punjab that most of the respondents were highly perceived with over-exploitation of water resources. The results also revealed that respondents had perceived that water resources are being depleted in Haryana and they also know the major reason of the same. Similar findings were reported by Mohammadi et al., (2013); Sharma et al., (2016); Rezaei et al., (2017); Bharat et al., (2022) who found that most of respondents were having high level of perception towards over-exploitation of water resources in their respective regions. The respondents were skeptical about water conservation practices and perceived them as waste of time, labor, and money, long distance between canal and field also major factor of exploitation of water, water conservation awareness programs help to stop the over-exploitation of water resources. This might explain that only few of respondents perceived that there is over-exploitation of water resources in Haryana. Similar results were found partially supported by Ankit (2018) where it was reported that only a few numbers of the respondents perceived over-exploitation of water resources. The results also revealed that respondents had perceived that there is no over-exploitation of water resources in Haryana and they also do not know the main cause of regarding the same. Similar findings were reported by Parveen et al., (2012); Malik et al., (2014); Rahman & Bulbul (2015); Kumar et al., (2021) who found that few of respondents were having low level of perception towards over-exploitation of water resources in their respective findings.

Relationship of socio personal traits with the perception of respondents towards over-exploitation of water resources

The independent variables viz; education, land holding, mass media exposure and extension contact were significant and positively correlated with respondents' perception towards over-exploitation of water resources while, age is significant and negatively correlated with perception of respondents (at 0.05 level of significance). The other variables such as family type, family size, occupation, cropping pattern, irrigation facilities, irrigation method, and water conservation structure had no significant relationship with perception of respondents towards over-exploitation of water

Table 2. Perception of respondents towards over-exploitation of water resources

S.No.	Item	WMS
1	Change in ground water availability	3.00
2	Ground water table goes down	3.00
3	Quality of water decreasing day by day	2.53
4	Less rainfall due to climate change	2.79
5	More dependency on ground water	2.87
6	No change in irrigation practices	2.50
7	Flood irrigation requires more water to irrigate the field	2.59
8	Uneven topography needs more water for irrigation	2.83
9	Small landholdings increase the number of borewell/ Tubewell	2.78
10	Rice Wheat cropping pattern leads to over exploitation of water	2.86
11	Intensive cropping pattern increases the requirement of irrigation	2.55
12	Mostly farmers stick with rice wheat cropping pattern	2.89
13	Early crop sowing requires more water for irrigation	2.48
14	Long distance between canal and field also major factor of exploitation of water	1.93
15	Supply of canal water is not sufficient for crop production	2.61
16	No or less alternative irrigation practices	2.55
17	Water conservation practices are waste of time, labor, and money	1.27
18	Farmers should adopt water conservation technology for judicious use of resources	2.87
19	Change in cropping patterns helps in water conservation	2.65
20	Farmers should irrigate field as per recommendations	2.85
21	Proper soil management is a key to conserve water	2.76
22	Avoiding mitigating runoff of rain water	2.75
23	Farmers should use ITKs for water conservation	2.54
24	Scientists should develop more efficient irrigation system	2.69
25	Farmers should adopt organic farming for more water conservation	2.17
26	Water conservation awareness programs helps to stop the over exploitation of water resources	2.15
27	Policies regarding water conservation should be at grass root level	2.75
28	Timely provision new tubewell /borewell connection	2.61
29	Crop diversification helps in water conservation	2.69
30	*Mera Pani Meri Virasat* scheme help to overcome exploitation of water	1.83

*WMS=Weighted mean score

resources. In case of positively correlated variable like education, land holding, mass media exposure and extension contact this could be due to the fact that as education, land holding, mass media exposure and extension contact increases, the respondents become more aware of the benefits of water resources, able to access valid information on water extraction, its judicious use and their scarcity in nature and thus to perceive the over-exploitation of water resources and might be due to fact that people become able to understand the phenomenon of over-exploitation of water resources as well as they become highly perceived towards over-exploitation of water resources. While in case of negatively correlated variable like age, this could be because older responders adhered to their old beliefs and did not employ new or effective irrigation technologies. This finding is well supported by Mohammadi et al., (2013); Ravikumar et al., (2015); Gupta et al., (2021). The regression analysis gave value of R^2 as 0.227 which shows that 12 independent variables in the study generated a total of 22.70 per cent variation in the perception of over-exploitation of water resources, when other factors were held constant. This indicates that just 22.70 per cent of the variation in the dependent variable was due to these 12 independent variables and other variables account for the remaining 77.30 per cent of variations. These findings were found to be partially supported by reports of Ankit (2018) where extension contacts, extension participation, mass media exposure and total earnings had positive and significant relation with perception of respondents towards over-exploitation of water resources. Habiba et al., (2012) in his study too reveled that education, mass media exposure and extension contact had significant and positive correlation with perception of respondents towards over-exploitation of water resources. Similarly, Kaur & Kalra (2016), observed that age showed negative and significant relationship while,

Table 3. Relationship of socio personal traits with the perception of respondents towards over-exploitation of water resources

S.No.	Variable	Correlation Coefficient ('r' value)	Regression Coefficient (B value)
1	Age	-0.341*	-7.431
2	Education	0.232*	-1.602
3	Family type	-0.142NS	-1.814
4	Family Size	-0.144NS	1.886
5	Occupation	0.043NS	0.227
6	Land holding	0.218*	3.787
7	Cropping pattern	-0.034NS	-1.844
8	Irrigation facilities	0.152NS	4.728
9	Irrigation method	0.00	0.00
10	Water conservation structure	0.092NS	-1.854
11	Mass media exposure	0.318*	0.899
12	Extension contact	0.255*	1.254

R^2 = 0.227, Constant = 58.844, *Correlation is significant, NS – not significant

education showed positive and significant relationship with perception of respondents regarding over-exploitation of water resources. Furthermore, findings of Kaur & Kumar (2014); Sarkar & Padaria (2015) partially supported that extension contacts, mass media exposure, total earnings and total land holding had positive and significant relationship with perception of respondents towards over-exploitation of water resources.

CONCLUSION

It was found that most respondents highly perceived change in ground water availability, ground water table going down and mostly farmers sticking with rice wheat cropping pattern. Further, most of the respondents lowly perceived that water conservation practices are waste of time, labor, and money, *Mera Pani Meri Virasat* scheme helped to overcome exploitation of water, long distance between canal and field also a major factor of exploitation of water. Age (negatively), education, land holding, mass media exposure, and extension contact were significantly correlated with the perception of farmers. It was possible to conclude that independent variables under study were found to be responsible for only 22.70 percent of the variation in the dependent variable. Proper education, awareness campaign, trainings, result and method demonstrations should be organized to develop the positive perception of people about the over exploitation of water resources and to make proper utilization of this finite resource.

REFERENCES

Ankit. (2018). Perception and awareness of farmers towards over-exploitation of ground water and its management practices in Punjab. Master's dissertation. Punjab Agricultural University, Ludhiana.

Bharat, Chapke, R. R., & Kammar, S. (2022). Farmers' perception about climate change and response strategies. *Indian Journal of Extension Education*, *58*(1), 7–11.

FAO. (2015). FAOSTAT Database. Rome: Food and Agriculture Organization. faostat.fao.org.

GOI (2020). Retrieved from https://pib.gov.in/PressRelease Page.aspx?PRID=1604871#:~:text=As%20per%20Ministry%20of%20Housing, benchmark%20for%20urban%20water%20supply

Gupta, S. K., Rao, D. U. M., Nain, M. S., & Kumar, S. L. (2021). Exploring agro-ecological bases of contemporary water management innovations (CWMIs) and their outscaling, *Indian Journal of Agricultural Sciences*, *91*(2), 263-268.

Habiba, U., Shaw, R., & Takeuchi, Y. (2012) Farmer's perception and adaptation practices to cope with drought: Perspectives from North-western Bangladesh. *International Journal of Disaster Risk Reduction, 1*, 72-84.

Kaur, A., & Kumar, G. (2014). Groundwater problems in Punjab: A matter of concern. *The International Journal of Humanities & Social Studies*, *7*(2), 215–20.

Kaur, L., & Kalra, R. K. (2016) Water Management Strategies for Sustainable Agriculture. *Indian Journal of Ecology*, *43*(2), 580-589.

Kumar, P., Mukteshawar, R., Rani, S., Malik, J. S., & Kumar, N. (2021). Awareness and constraints regarding water conservation practices in Haryana (India). *Indian Journal of Extension Education*, *57*(3), 48–52.

Kumar, S., Sankhala, G., & Kar, P. (2021) Development of tool to measure the farmers' perception towards dairy-based farmer producer companies. *Indian Journal of Extension Education, 57*(4), 134-138.

Lumen learning (n.d.). What is Perception? Retrieved from https://courses.lumenlearning.com/msstatewaymakerpsychology/chapter/reading-what-is-perception

Malik, R. P. S., Giordano, M., & Sharma, V. (2014). Examining farm-level perceptions, costs, and benefits of small water harvesting structures in Dewas, Madhya Pradesh. *Agricultural Water Management*, *131*(1), 204–211.

Mohammadi, Y., Fami, H. S., & Asadi, A. (2013). Farmers' perception of water scarcity and components influencing on this challenge in Fars province. *African Journal of Agricultural Research*, *8*(17), 1804–1812.

Rahman, M. R., & Bulbul, S. H. (2015). Adoption of water saving irrigation techniques for sustainable rice production in Bangladesh. *Environment and Ecology Research*, *3*(1), 1–8.

Ravikumar, K., Nain, M. S., Singh, R., Chahal, V. P., & Bana, R. S. (2015). Analysis of farmers' communication network and factors of Knowledge regarding agro-metrological parameters. *Indian Journal of Agricultural Sciences*, *85*(12), 1592-1596.

Rezaei, A., Salmani, M., Razaghi, F., & Keshavarz, M. (2017). An empirical analysis of effective factors on farmers' adaptation behavior in water scarcity conditions in rural communities. *International Soil and Water Conservation Research*, *5*(4), 265–272.

Sarkar, S., & Padaria, R. N. (2015). Measuring farmers' awareness and knowledge level about climate change and formulating future extension strategies. *Indian Research Journal of Extension Education, 15*(1), 107-111.

Sharma, P., Kaur, L., Mittal, R., Kaur, S., & Kaur, S. (2016). Awareness about effects of climate change on water resources and its solution. *Indian Journal of Economics and Development*, *12*(1), 573-78.