Constraints Perceived by Buffalo Farmers in Interaction with Information Providing Stakeholders

Kamal Kumar[1*], Mahesh Chander[1], V. B. Dixit[2] and Hema Tripathi[2]

[1]*Division of Extension Education, Indian Veterinary Research Institute, Izatnagar, Bareilly (Uttar Pradesh), India.*
[2]*Central Institute for Research on Buffaloes, Hisar (Haryana), India.*

Authors' contributions

This work was carried out in collaboration among all authors. Author KK designed the study, conducted field works, wrote the first draft of the manuscript and wrote the protocol. Authors MC, VBD and HT managed the literature searches, performed the statistical analysis, analyses of the study. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

The present study was conducted in Haryana. The 120 buffalo farmers from twelve villages constituted the sample size for the present study. An ex-post facto research design was used for the study. Farmers were asked to rank the constraints that they faced in their interaction with stakeholders. The constraints were studied under four subheads viz., farmers related, extension related, veterinary and infrastructure-related, and other constraints. It was found that low extension agency contact and lack of information about stakeholders were the most important farmers' related constraints. Most serious extension-related constraints were less focus of state department of animal husbandry personnel on extension activities, unavailability of information in the local language, poor availability of buffalo related literature. The most severe veterinary and infrastructural constraints were lack of rapport of farmers with veterinary surgeons, less availability of veterinary surgeons, inadequate number of veterinary functionaries. Less information on marketing channels, less information on credit/loan, source of credit availability were other most

_____

Corresponding author: E-mail: kamalvet1995@gmail.com;

serious constraints that were acting as impediments in their interaction with stakeholders. The perceived constraints can be overcome by increasing extension agency contact, increasing social participation, availing more communication media to the farmers, providing buffalo related literature in the local language, increasing the number of veterinarians per thousand animals, off-campus training, efficient management of cooperatives, more information on market and farm credit, need-based information, and context-specific information to the farmers. The findings of the present research would provide new insights about the impediments in the interaction of buffalo farmers with stakeholders.

1. INTRODUCTION

Buffalo plays a vital role in the rural livelihood, food security, and agricultural economy of India. The buffalo is "black gold" and rightly occupies a central role in the dairy sector, meat industry, and animal draught power. Besides, the Buffaloes are heralded as key contributors for ensuring nutritional security to the masses in the Asian region, which harbors 97.04 percent of the world buffalo population out of 199.8 million heads. India is home to 57.80 percent of the world buffalo population. The species contributes 12.92 percent of the total milk produced in the world. However, 97.07 percent of the buffal milk is produced in the Asian region, with a predominant contribution of 67.75 percent by India alone [1].

Buffalo is preferred over white cattle in many parts of the country owing to its superior quality of milk, disease resistance, longer productive life, and higher milk productivity. Therefore, it is no surprise that while the cattle population is witnessing a downward trend; the buffalo population has increased by 3.19 percent during the 19th livestock census [2].

The present human society resides in a modern era and as a consequence, man has become more and more information conscious. More and more people deliberately seek information and it's become an integral part of the act especially within the area of education, research, and development, farming practices (e.g. castrations, dehorning, and marketing of animals). The information must be relevant and meaningful to farmers, in addition to being packaged and delivered in a way preferred by them [3]. Context-specific information could have higher impacts on the adoption of technologies and increase farm productivity for marginal and small agricultural landholders [4].

Based on the extensive review of the literature it was found that farmers had less interaction with the stakeholders, which is also impeding the buffalo development in the state. Constraints imply the problems or difficulties faced by buffalo farmers in their interaction with the information providing stakeholders. If these constraints are identified, they will be helpful for buffalo development in the state. Dixit [5], who conducted a study on interactions among different subsystems of dairy development in Haryana, found that there was a significant difference in the existing and desired level of interaction of farmers among themselves and with different stakeholders.

The low level of income, poverty, inability to access formal channels of information, lack of personal knowledge and special knowledge, language barrier, cultural beliefs, high rate of illiteracy, and ignorance of information sources were the important socio-economic constraints. Whereas, inadequate to contact extension officials, negative attitude of government officials, odd timings of agricultural programs on radio and television, and unavailability of information centres were the significant problems in accessing information [6].

Unavailability of information centres and the unwillingness of agriculture officials, unawareness, and poverty were the major constraints in accessing information [7]. The major constraints to information access were poor availability and reliability of the information, lack of awareness of information sources available, and unavailability of timely information [8]. So, the present study was undertaken to identify the major constraints faced by buffalo farmers in interaction with the various stakeholders, who are working for buffalo development in the state.

2. MATERIALS AND METHODS

2.1 Selection of Districts

Three districts from Haryana were selected randomly i.e. Karnal, Kurukshetra and Hisar.

2.2 Selection of Blocks

Two blocks from each randomly selected district were selected randomly. Thus, a total of six blocks *viz.,* Karnal, Nilokheri, Hisar, Hansi, Pehowa and Ladwa were studied.

2.3 Selection of Villages

From each selected block, two villages were selected randomly. Thus, four villages from each district to a total of twelve villages namely Kalampura, Kachhwa, Sagga, Bir Naraina, Sehzadpur, Kharkali, Azravar, Thol, Kulana, Aryanagar, Balsamand and Bhatla, constituted the study area.

2.4 Selection of Respondents

From each selected village, ten buffalo farmers were selected randomly. Thus arriving at a total sample size of 120.

2.5 Data Collection

An interview schedule was an appropriate device to collect data from the respondents for the present study. Keeping in mind the objectives of the study, the interview schedule was prepared, incorporating suitable measuring devices and tools of measurements to measure the selected variables, in English and were asked in Hindi to elicit and record accurate responses from the respondents. Necessary precautions were taken to ensure that the questions in the schedule were unambiguous, clear, complete, and comprehensive. Before finalizing the schedule, it was pretested with 12 non-sample respondents in the non-sampling area. On the basis of the experience gained, the appropriate modification was made to improve the clarity of the instrument. The data was collected from the respondents using the personal interview method by the researcher. The constraints were studied under four subheads viz., farmers related, extension related, veterinary and infrastructure-related, and other constraints.

2.6 Constraints

Constraints are difficulties, problems, or obstacles from which a person wants to come back out by his/her own efforts or with the assistance of others. A constraint is anything that forestalls a system from achieving the next performance associated with its goal. Constraints have also been considered because of the state of being restricted to, in a very given course of action. Within the present study, a constraint means impediments perceived by buffalo farmers in accessing information per scientific buffalo husbandry practices, through various sources and channels of data. These were documented separately within the interview schedule that was prepared with the assistance of varied works of literature, discussion with scientists, and in consultation with progressive buffalo farmers.

2.7 Garret Ranking

The Garret ranking method was used to know the preference among the constraints. Garrett's ranking technique was used to rank the constraints perceived by the buffalo farmers in accessing information from stakeholders based on its seriousness and significance. The order of priority and severity of the constraints given by the respondents was converted into ranks by using the following formula.

Percentage position = $\dfrac{100\,(R_{ij}-0.5)}{N_i}$

Where,

R_{ii} = Rank given for the ith variable by j^{th} respondent

N_i= Number of variable ranked by j^{th} respondent

With the help of Garrett's table, the percent position estimated was converted into scores. Then for each constraint, the scores of each individual were added and the total value of scores and mean values of the score were calculated. The constraint having the highest mean value was considered to be the most serious. The percentage position and their corresponding Garret's table values are shown in Table 1. Garrett's method for constraint analysis was used by Christy [9], Rao et al. [10], Jagriti [11], Mohapatra and Mishra [12], and Verma and Kumawat [13], etc.

Table 1. Percent position and Garrett's table value

Rank	Percentage	Position	Garrett's table value
1.	100(1-0.5)/10	5	82
2.	100(2-0.5)/10	15	71
3.	100(3-0.5)/10	25	64
4.	100(4-0.5)/10	35	58
5.	100(5-0.5)/10	45	53
6.	100(6-0.5)/10	55	48
7.	100(7-0.5)/10	65	43
8.	100(8-0.5)/10	75	37
9.	100(9-0.5)/10	85	30
10.	100(10-0.5)/10	95	19

3. RESULTS AND DISCUSSION

Constraints perceived by the buffalo farmers in interaction with stakeholders were studied in the present study; a constraint means impediments perceived by buffalo farmers in accessing information about scientific buffalo husbandry practices, from different information providing stakeholders. The findings of the study are discussed below.

3.1 Farmers Related Constraints

As indicated in Table 2, the farmers-related most important constraints were ranked based on the average score obtained by the Garrett ranking method. The constraints in descending order of their importance were low extension agency contact (55.74), lack of knowledge about information providing stakeholders (52.40), lack of communication media (51.97), low level of education (51.80), low social participation (51.45), low level of income (49.47), lack of time (48.65), less number of progressive buffalo farmers (47.71), poor sharing of information between the buffalo farmers (47.14) and reluctant and shy nature of buffalo farmers (41.59). The findings were following the observations of Uganneya and Umaru [14] who reported that lack of formal education of the women farmers was a prominent constraint. Similar findings were reported by Mtega and Benard [15] who carried out a study on the state of rural information and communication services in Tanzania and revealed that unreliable information, high illiteracy, low income were the major constraints.

3.2 Extension Constraints Perceived by the Farmers

As shown in Table 3, the extension constraints in the descending order of their seriousness were less focus of state department of animal husbandry personnel on extension activities (58.14), unavailability of information in the local language (56.39), poor availability of buffalo related literature (55.65), language barrier (54.57), unavailability of need-based information (54.55), less information available on government schemes (52.42), complex technology difficult to understand (51.70), excess of unrelated information (48.58), the credibility of information (36.43) and information overload (28.86). The results were in concurrence with the findings of Jalaja and Kala [6] who conducted a study on tribal farmers' agricultural information needs and accessibility in Attappady tribal block, Palakkad district of Kerala and found major constraints perceived by the farmers' were low extension agency contact, language barrier, low level of income and poverty.

3.3 Veterinary and Infrastructural Constraints Perceived by the Respondents

As apparent from Table 4, the most serious veterinary and infrastructural constraints were lack of rapport of farmers with veterinary surgeons (63.73), less availability of veterinary surgeons (60.35), an inadequate number of veterinary functionaries (58.63), on-campus/institute training (57.53) inefficient management of cooperatives (53.82), poor communication facilities (45.84), poor veterinary infrastructure (45.39), unsuitable timing for training and lectures (38.83), long-distance of information centre (38.14), unavailability of space for panchayat meetings (38.65) and were ranked first, second, third, fourth, fifth, sixth, seventh, eighth, ninth and tenth, respectively. Similar findings were reported by Benard et al. [16] who found that major constraints in accessing agricultural information were lack of information services, inadequate number of extension agents, and lack of relevant materials.

Table 2. Farmers' related constraints

S. No.	Constraints	MS	Garrett's Rank
1.	Low extension agency contact	55.74	1
2.	Lack of knowledge about the information providing stakeholders	52.40	2
3.	Lack of communication media	51.97	3
4.	Low level of education	51.80	4
5.	Low social participation	51.45	5
6.	Low level of income	49.47	6
7.	Lack of time	48.65	7
8.	Less number of progressive buffalo farmers	47.71	8
9.	Poor sharing of information between the buffalo farmers	47.14	9
10.	Reluctant and shy nature of buffalo farmers	41.59	10

MS- Mean score

Table 3. Extension constraints perceived by the farmers

S. No.	Constraints	MS	Garrett's Rank
1.	Less focus of SDAH personnel on extension activities	58.14	1
2.	Unavailability of information in local language	56.39	2
3.	Poor availability of buffalo related literature	55.65	3
4.	Language barrier	54.57	4
5.	Unavailability of need based information	54.55	5
6.	Less information available on government schemes	52.42	6
7.	Complex technology difficult to understand	51.70	7
8.	Excess of unrelated information	48.58	8
9.	Credibility of information	36.43	9
10.	Information overload	28.86	10

MS- Mean score

Table 4. Veterinary and infrastructure related constraints perceived by the respondents

S. No.	Constraints	MS	Garrett's Rank
1.	Lack of rapport with veterinary surgeons	63.73	1
2.	Less availability of veterinary surgeons	60.35	2
3.	Inadequate number of veterinary functionaries	58.63	3
4.	On-campus/institute trainings	57.53	4
5.	Inefficient management of cooperatives	53.82	5
6.	Poor communication facilities	45.84	6
7.	Poor veterinary infrastructure	45.39	7
8.	Unsuitable timing for trainings and lectures	38.83	8
9.	Long distance of information center	38.14	9
10.	Unavailability of space for panchayat meetings	38.65	10

MS- Mean score

3.4 Other Constraints as Perceived by Respondents

As evident from Table 5, the other constraints *viz.,* less information on marketing channels (69.50), less information on credit/loan (52.47), source of credit availability (50.88), lack of information on value addition (49.75), non-availability of information on animal health records and certificates (48.98), the biased approach of bank officials in providing loan for buffaloes (48.25), non-availability of pedigree bull (45.85), less number of reliable sources for animal purchase (45.46), the biased approach of field functionaries (43.31), lack of personal interest in interaction on market and credit (42.69) were ranked first, second, third, fourth, fifth, sixth, seventh, eighth, ninth and tenth, respectively. The results were in concurrence with the findings of Siyao [17] and Odini [18] who conducted their study in Kenya and Tanzania, respectively, and reported that major constraints were the negative attitude of information providers, biased outlook were major constraints to access to information. Similar results were reported by Tailor et al. [19] who found that the non-availability of the pedigreed bull was a major constraint perceived by the farmers'.

Table 5. Other constraints perceived by the respondents

S. No.	Constraints	MS	Garrett's Rank
1.	Less information on marketing channels	69.50	1
2.	Less information on credit/loan	52.47	2
3.	Source of credit availability	50.88	3
4.	Lack of information on value addition	49.75	4
5.	Non availability of information on animal health records and certificates	48.98	5
6.	Biased approach of bank officials in providing loan for buffaloes	48.25	6
7.	Non availability of pedigree bull	45.85	7
8.	Less number of reliable sources for animal purchase	45.46	8
9.	Biased approach of field functionaries	43.31	9
10.	Lack of personal interest in interaction on market and credit	42.69	10

MS- Mean score

4. CONCLUSION

Low extension agency contact, less focus of state department of animal husbandry personnel on extension activities, lack of information on marketing channels, and lack of rapport of farmers with veterinary surgeons were the most serious constraints as perceived by the buffalo farmers. The constraints perceived by the buffalo farmers need to be addressed, else they can be big impediments for the buffalo development in the state. These constraints can be overcome by increasing extension agency contact of the farmers by creating more channels for information dissemination on scientific buffalo husbandry practices, social participation needs to be increased so that more interaction can be facilitated between the farmers and stakeholders. As reported by the farmers, they required buffalo related literature in the local language, as sought by them, there is an urgent need of enhancing the number of veterinarians per thousand animals, they demanded more off-campus training i.e. either in their villages or nearby village or at district headquarters. The impediments related to various stakeholders can be removed by the urgent intervention of all the stakeholders who are working for buffalo development in the state viz. veterinarians, marketing agencies and extension agencies, cooperative societies, bank personnel and all other concerned stakeholder. The finding of the study will be very helpful for the stakeholders to understand the obstacles, in their interaction with the farmers and thus resolving the same for buffalo development in the state.

CONSENT

As per international standard or university standard, participant's written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Singh I. Address to the delegates. Proceedings of 9th Asian Buffalo Congress. CIRB, Hisar, Haryana, India; 2018.
2. Government of India. Department of Animal Husbandry Dairying and Fisheries, Annual report 2016-17. Ministry of Agriculture and Farmers Welfare, Department of Animal Husbandry, Dairying and Fisheries, Krishi Bhawan, New Delhi. Accessed 05.09.2018.
   Available:http://dahd.nic.in/sites/default/files/Annual%20Report%202016-17.pdf
3. Diekmann F, Loibl C, Batte MT. The economics of agricultural information: Factors affecting commercial farmers information strategies in Ohio. Review of Agricultural Economics. 2009;31(4):853-872.
4. Sammadar A. Traditional and post-traditional: A study of agricultural rituals in relation to technological complexity among rice producers in two zones of West Bengal, India. Journal of Culture and Agriculture. 2006;28(2):108-121.
5. Dixit VB, Laharia SN, Bhardwaj A. A critical analysis of interactions among different sub-systems of dairy development. Indian Research Journal of Extension Education. 2005;5(2&3):15-18.
6. Jalaja V, Kala PA. Case study of tribal farmer's agricultural information needs and accessibility in Attappady tribal block,

Palakkad. Journal of Humanities and Social Science. 2015;20(8):07-12.

7. Kumar M. Information seeking behaviour of the farmers in Unchahar Raebareli, Uttar Pradesh: A survey. Global Journal for Research Analysis. 2014;3(3):74-76.

8. Babu SC, Glendenning CJ, Asenso-Okyere K, Govindarajan SK. Farmers' information needs and search behavior. The International Food Policy Research Institute, paper. 2012;1165:1-37.

9. Christy John. Garrett's ranking analysis of various clinical bovine mastitis control constraints in Villupuram District of Tamil Nadu. IOSR Journal of Agriculture and Veterinary Science. 2014;7.62-64.
DOI: 10.9790/2380-07416264

10. Rao Benhur, Zalkuwi Jimjel, Singh Rakesh, Bhattarai Madhusudan, Singh O. Analysis of constraints influencing sorghum farmers using Garrett's ranking technique; A comparative study of India And Nigeria. International Journal of scientific research and management. 2015;3:2435-2440.

11. Rohit Jagriti, Dubey SK, Singh Premlata, Singh BK, Kumbhare NV. An assessment of constraints faced by the farmers in peri-urban vegetable cultivation. Int.J.Curr.Microbiol.App.Sci. 2017;6(10): 2245-2251.
DOI:https://doi.org/10.20546/ijcmas.2017.6 10.265

12. Mohapatra Upasana, Mishra Raj Kishore. Farmer's perception towards climate change in Odisha, India. Int. J. Curr. Microbiol. App. Sci. 2019;8(09):2579-2584.
DOI:https://doi.org/10.20546/ijcmas.2019.8 09.298

13. Verma BL, Kumawat RC. Constraints being faced by the farmers in the production of major field crops in the state of Rajasthan, India. Int. J. Curr. Microbiol. App. Sci. 2020;9(06):1763-1773.
DOI:https://doi.org/10.20546/ijcmas.2020.9 06.220

14. Uganneya S, Umaru I. Access to information and communication media by women farmers in Benue State Nigeria. Production Agriculture and Technology. 2008;1(4):53-61.

15. Mtega W, Benard R. The state of rural information and communication services in Tanzania: A meta-analysis. International Journal of Information and Communication Technology Research. 2013;3(2):64-73.

16. Benard R, Dulle F, Ngalapa H. Assessment of information needs of rice farmers in Tanzania: A case study of Kilombero district, Morogoro. Library Philosophy and Practice (e-journal). 2014;1071.
Accessed 08.05.2019.
Available:http://digitalcommons.unl.edu/lib philprac/1071/

17. Siyao PD. Barriers in accessing agricultural information in Tanzania with a gender perspective: The case study of small-scale sugar cane growers In Kilombero district. Electronic Journal of Information systems in Developing Countries. 2012;51(6):1-19.

18. Odini S. Access to and use of agricultural information by small scale women farmers in support of efforts to attain food security in Vihiga County, Kenya. Journal of Emerging Trends in Economics and Management Sciences. 2014;5(2):80-86.

19. Tailor R, Meena GL, Sharma L, Sharma FL. Constraints faced by the tribal farmers in dairy farming in Udaipur district. Rajasthan Journal of Extension Education. 2012;20:187-189.