ASSESSMENT AND PRIORITIZATION OF INFORMATION NEEDS IN BUFFALO PRODUCTION SYSTEM PERCEIVED BY FARMERS TO DEVELOP MOBILE APPS AS AN EXTENSION SERVICE DELIVERY TOOL

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ABSTRACT

Information needs in buffalo production system to develop mobile apps as an extension service delivery tool were assessed and prioritized in seven distinct segments. Data were collected personally from 100 buffalo owners from Haryana and Rajasthan and mean weighted average scores were calculated and ranked. Age at puberty and maturity and identification of heat symptoms and heat detection were the two top areas under broad area of reproduction wherein majority of farmers expressed their desire to include as content in mobile app. Information on infertility and prolapse of uterus were main reproductive problems and needed information under broad area of reproductive problems. Information on characteristics of good dairy animals followed by best buffaloes suited for local conditions along with production potential were areas identified under breeding head. Respondents needed information on use of mineral mixture and computation of ration and feeding schedule as per age and stage of animal under buffalo feeding information on mastitis and control of foot and mouth disease under the disease control and control of external parasites and vaccination schedule under health management were the subareas under the head. Farmers expressed need to have information on farmers training and warning systems about diseases and weather forecasts under the broad areas of marketing and training apart from various other areas in each major segment include as content while developing the mobile app on buffalo production system.

Keywords: *Bubalus bubalis*, buffaloes, information needs, buffalo production system, buffalo owners

INTRODUCTION

Identification of needs is one of the prerequisites for development of ICT tools and strong information delivery system for smoother and faster access of information for farmers at their doorstep for receiving and sharing scientific information and the knowledge. Properly addressed

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and most needed information needs act as input to sustain a production system for quick and accurate decisions.

Like other production systems, farmers have specific needs in buffalo production systems too, to adopt good buffalo farming practices in the broad areas of buffalo health, nutrition, breeding, reproduction, marketing and extension trainings etc for sustainable livelihood and welfare of buffaloes. Most of the livestock owners in India lack required information on practices which could enhance livestock productivity and product quality (Chander and Thakur, 2016).

Majority of buffalo farmers approach non-formal sources for information on scientific buffalo farming, sometimes mis-information leads huge loses to farmers as well as to animals also. Providing right information at right time from credible source will boost the individual farmers herd productivity. Therefore present study has been taken up to explore and prioritize the various informational needs of buffalo owning farmers based on their weighted mean score in each related subject area of buffalo production system. The outcome of the study would help to develop an alternative extension service delivery and focussed advisory system for solving problems by reaching greater audience especially amongst the disadvantaged groups, living in remote areas in enhancing the production, productivity and income by minimizing the transaction cost.

MATERIALS AND METHODS

For the purpose of research, Haryana and Rajasthan states were chosen purposively due to accessibility and ease in communication. Data has been collected after developing bilingual interview schedule to understand the information needs of buffalo owners in 10 adopted villages under Mera Gaon Mera Gaurav (MGMG) program from two different states. The samples for the study constituted 100 buffalo owners. Fifty farmers were selected randomly from each of the selected states by selecting 10 buffaloes owners from each village who was having more than 02 adult milch buffaloes. Data were collected on three point continuum ie Most needed, Needed and Not needed with respective scores of 3, 2 and 1 in the areas of production, breeding, reproduction, feeding, health, management, marketing and training etc. besides on socio economic characteristics of the buffalo owners. Data so collected was tabulated and scored against each of the predefined activity in each broad areas and the ranking was done based on mean weighted scores.

RESULTS AND DISCUSSION

Table 1 indicates that majority of the farmers (53%), belonged to young age category (<30 years), mostly educated having agriculture as main family occupation. More than 90% of the respondents were married and mostly belongs to nuclear family system, having family size of 2-5 members, owing less than 1hectare land.

Preferred media for information and frequency of use

Table 2A shows the extent of use of interpersonal formal sources by buffalo owners for information on scientific farming, 67% farmers were contacting paravets followed by veterinary officer/ VLDA (57%) and NGOs (55%) on scientific buffalo farming. 26% of farmers were consulting NGOs for credit and marketing related information

followed by 19% to extension officer in each for scientific farming, credit and marketing.

In Table 2B, neighbors, family, friends were the major sources revealed by 98% respondents interpersonal as informal sources for receiving information on scientific buffalo farming followed by veterinary medical shops (57%) progressive farmers (54%) and livestock feed shops (42%). Progressive farmers were the more contacted source (24%) than other sources for credit and market related information. Farmers did not show any interest to use any of the informal information sources for processing related information.

It is reflected from Table 2C that mass media usage of the farmers revealed that radio was the major mass media source revealed by 77% of farmers to get the information on scientific buffalo farming. Newspaper was the other major information source expressed by 65% respondents to get marketing information. Use of internet and mobile apps was only by 12% farmers and 4% of respondents to get information on scientific buffalo farming. Television was used by 23% respondents to get information in each of buffalo farming, credit, marketing and processing.

Perceived information needs of the buffalo owners

Table 3A pointed out that out of 10 parameters, heat symptoms and heat detection got the highest rank followed by age at puberty and maturity and peripartum care in descending order. Information on gestation period, pregnancy diagnosis castration of scrub bull were the least required needs revealed by the respondents to include as content while developing the mobile app or any other extension delivery tool.

Table 3B reveals data on Information needs on reproductive problems of buffaloes. Out of 16 problems infertility, prolapse of uterus and retention of placenta were the most needed information areas and got the highest rank followed by anoestrus, abortion and dystocia in descending order. Information on vaginitis, sterility at early age, pyometra and delayed age at first calving were the least required information needs revealed by the respondents under reproductive problems.

Under Breeding: Selection and Availability of Animals, three parameters were taken for data collection wherein characteristics of good dairy animal was the highest ranked and most needed information area followed by best buffaloes suited for local conditions along with production potential (Ranked II) and high yielding breeds of buffaloes was the least preferred are for information revealed by buffalo owners (Table 3C).

Feeding was one of the major areas wherein data on information needs were collected on 9 parameters and presented in Table 3D. Formulation and use of mineral mixture was highest ranked area and most needed information area followed by computation of ration and feeding schedule as per age and stage of animal (Ranked II), and information on balanced feeding (Ranked III) were the three top areas for information. Silage making, making of urea treatment straw and feeding and management of buffalo bull/ male calves for early maturity and higher fertility were less needed areas for information based on the mean score.

Subash *et al.* (2015) prioritized informational needs of dairy farmers in Karnal district of Haryana found nutrition and feeding, breeding and reproduction, general management, health care management and fodder production in descending order.

Data on information needs of buffalo owners for the health care management were collected on 19 different diseases/problems

Table 1. Classification of respondents according to their socio personal characteristics.

Socio personal characteristics	% (N=100)
Age categories (years)	
<30	53
31-60	34
>60	13
Education status	
Illiterate	7
Can read and write	-
Middle	4
High school	25
Intermediate	32
Graduate	28
Post graduate	4
Family main occupation	
Agricultural farming	61
Business	4
Livestock farming	13
labour	15
Service	7
Marital status	
Married	93
unmarried	7
Family size (Numbers)	
Small (2-5)	64
Medium (6-9)	32
Large (10-13)	4
Family type	
Joint	21
Nuclear	79
Land holding	
Landless	24
<1 ha	54
1-2 ha	12
<2 ha	10
Livestock holding (Bovine) (average herd size 4.52)	
<3 animals	56
>3 animals	44

Table 2A. Use of interpersonal formal sources for information on scientific buffalo farming (%).

Interpersonal formal sources	Scientific buffalo farming	Credit	Marketing	Processing
Veterinary Officer /VLDA	57	1	-	-
Milk Co-operatives	9	1	9	9
Experts from University/Institutes	21	-	4	4
Private livestock companies	5	-	5	-
Village teacher	-	-	-	-
Extension officer	19	19	19	-
Youth club	-	-	-	
NGOs	55	26	26	4
Paravets	67	-	-	-

Table 2B. Use of interpersonal informal sources for information on scientific buffalo farming (%).

Informal Interpersonal Sources	Scientific buffalo farming	Credit	Marketing	Processing
Neighbours, family, friends	98	2	7	2
Progressive farmers	54	24	22	3
Milk vendor	-	-	-	
Sarpanch	9	9	9	-
Livestock feed shops	42	2	2	-
Veterinary medical shops	57	1	9	-
Input supplier	4	-	-	-

Table 2C. Mass media usage for information on scientific farming (%).

Mass media	Scientific buffalo farming	Credit	Marketing	Processing
Radio	77	12	57	7
Newspaper	65	13	65	16
Internet	12	3	4	4
Mobile app	4	-	-	-
Television	23	23	23	23
Farm publication	16	5	5	5
Animal exhibition/ melas	45	45	45	45

Table 3A. Perceived information needs under production parameters of buffaloes.

Information Needs	Most needed	score	Needed	Score	Least needed	Score	Total score	Rank
Age at puberty and maturity	92	276	8	16	-	-	292	II
Heat symptoms and heat detection	100	300	-	-	-	-	300	I
Artificial insemination	80	240	12	24	8	8	264	VII
Pregnancy diagnosis	61	183	27	54	12	12	249	IX
Gestation period	61	183	30	60	9	9	252	VIII
Inter calving period	76	228	22	44	2	2	274	V
Age at first calving	78	234	20	40	2	2	276	IV
Castration of scrub bulls	23	69	10	20	67	67	156	X
Peri partum care	85	225	15	30	-	-	285	III
Bull selection, management and use	67	201	33	66	-	-	267	VI

Table 3B. Perceived information needs under buffalo reproductive problems.

Information Needs	Most needed	Score	Needed	Score	Least needed	Score	Total score	Rank
Anoestrous	82	246	17	34	1	1	281	IV
Dystocia	78	234	13	26	9	9	269	VI
Infertility	95	285	5	10	-		295	I
Abortion	74	222	9	18	17	34	273	V
Retention of placenta	84	252	14	28	2	2	282	III
Delayed puberty	65	195	33	66	2	2	263	VII
Repeat breeding	62	186	35	70	3	3	259	VIII
Torsion of uterus	55	165	22	44	23	23	232	X
Prolapse of uterus	88	284	12	24	-	-	288	II
Metrritis (infection)	43	129	25	50	32	32	211	XI
Pyometra	22	66	44	88	34	34	188	XIV
Vaginitis	12	36	33	66	54	54	156	XVI
Sterility at early age	25	75	30	60	45	45	180	XV
Delayed age at first calving	58	174	10	20	2	2	196	XIII
Venereal diseases	55	165	31	62	14	14	241	IX
Fetal maceration and mummification	25	75	60	120	15	15	210	XII

Table 3C. Perceived information needs under breeding: Selection and availability of buffaloes.

Information Needs	Most needed	score	Needed	Score	Least needed	Score	Total score	Rank
Best buffaloes suited for local conditions along with production potential	84	252	16	32	-	-	284	II
Characteristics of good dairy animals	92	276	08	16	-	-	292	I
High yielding breeds of buffaloes	67	201	21	42	12	12	255	III

Table 3D. Perceived information needs under buffalo feeding.

Information Needs	Most needed	score	Needed	Score	Least needed	Score	Total score	Rank
Computation of ration and feeding schedule as per age and stage of animal	78	234	16	32	6	6	272	II
Feeding and management of buffalo bull/ male calves for early maturity and higher fertility	52	156	24	48	24	24	228	VII
Balanced feeding	62	186	34	68	4	4	258	III
Colostrum feeding to new born calf	55	165	35	70	-	-	235	V
Formulation and use of mineral mixture	87	261	09	18	04	04	283	I
Complete feed block	38	114	58	116	04	04	234	VI
Making of urea treated straw	22	66	52	104	26	26	196	VIII
Silage making	17	51	51	102	32	32	185	IX
Round the year fodder production	65	195	24	48	11	11	254	IV

Table 3E. Perceived information needs under buffalo disease management.

Information needs	Most needed	score	Needed	Score	Least needed	Score	Total score	Rank
Anthrax	55	165	22	44	23	23	237	XI
Hemorrhagic Septicaemia	77	231	21	42	02	02	275	VI
Brucellosis	53	174	17	34	20	20	228	XIII
Tuberculosis	58	174	20	40	22	22	236	XII
Black quarter	61	183	20	40	19	19	242	IX
Mastitis	100		-		-		300	I
Foot and mouth disease	95	285	05	10	-		295	II
Blue tongue	22	66	32	64	46	46	176	XIV
Bovine viral diarrhoea	86	258	14	28	-	-	286	V
Rabies	62	186	22	44	16	16	246	IX
Milk fever	46	138	36	72	18	36	246	VIII
Bloat	89	267	11	22	-	-	289	III
Bovine ephemeral fever	27	81	15	30			111	XVI
Listeriosis	-						-	
Leptospirosis	-						-	
Bovine surra	34	102	56	92	10	10	204	XIII
Pica	12	36	34	68	54	54	158	XV
Foot rot	57	171	19	38	24	48	257	VII
Naval ill	88	264	12	24	-	-	288	IV

Table 3F. Perceived information needs under buffalo health management.

Information needs	Most needed	score	Needed	Score	Least needed	Score	Total score	Rank
Vaccination schedule	98	294	02	04	-	-	298	II
Control of external parasite	100	300	-	-	-	-	300	I
Deworming practices	56	168	42	84	02	04	256	IV
Disposal of dead animal	52	156	23	46	25	25	227	V
First aid in animals	87	261	13	26	-	-	287	III

Table 3G. Perceived Information needs under marketing and training.

Information Needs	Most needed	Score	Needed	Score	Least needed	Score	Total score	Rank
Market information: best market price	85	255	15	30	-	-	285	IV
Buffalo farm business and management	69	207	22	44	9	9	260	VI
Input information: source, price	82	246	18	36	-	-	282	V
Warning systems about diseases and weather forecasts	89	267	11	22	-	-	289	II
Financial: credit availability, source	88	264	10	20	2	2	286	III
Government schemes and plans	62	186	20	40	22	22	218	VII
Information on farmers training	91	273	9	18	-	-	291	I

commonly found in buffaloes (Table 3E). Cent per cent respondents wished to have information on mastitis and foot and mouth disease followed by bloat, naval ill and bovine viral diarrhoea. Pica, bovine ephemeral fever, blue tongue, anthrax, surra, brucellosis, tuberculosis etc were the diseases wherein farmers revealed less interest for inclusion of information in newly developing extension delivery tools. Farmers showed interest to have information on haemorrhagic septicaemia, foot rot, milk fever, rabies and black quarter. listeriosis and leptospirosis were the two diseases wherein none of the farmers desired to have information, may be due to lack of awareness and less occurrence of diseases.

Under the area of buffalo health management, control of ecto parasites followed by vaccination schedule, first aid in animals, dewarming schedule of animals, disposal of dead animals were the information areas revealed by respondents in descending order (Table 3F).

As far as marketing and training related information needs was concerned, farmers needed information on the training schedule (Rank I) followed by warning systems about diseases and weather forecasts and information on credit availability its source. They showed less interest in getting information on best market price, farm business and management and Government schemes and plan in order (Table 3G). Gangil *et al.* (2019); Shahjar *et al.* (2018); Sarita *et al.* (2017); Shyam *et al.* (2016); Singh *et al.* (2016); Jadav *et al.* (2014); Landge *et al.* (2006), also identified similar areas under broad areas of production, fundamentals of dairy nutrition and nutrients; feeding strategies in natural calamities, vaccination schedule; commonly occurring dairy animal diseases; disease management, de-worming schedule; different marketing agencies, backward linkages, forward linkages and credit organizations were greatly needed under marketing of farmers and farm women.

CONCLUSION

Keeping in the view thus buffalo owners are the primary producers in the supply chain, should be given an opportunity that satisfy their demands by adopting good buffalo farming practices to make the buffalo production more safe, sustainable and secure livelihood system. Perceived needs of the buffalo owners must be taken into consideration on priority to provide demand driven and value added information in time through various information sources and as content while developing mobile apps or other extension service delivery tools. Therefore addressing information needs perceived by farmers would be helpful to the policy makers and administrators to formulate strategies in order to potentiate veterinary extension system and information delivery system by developing ICT based extension service delivery tools, mobile apps, trainings etc.

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