

## Role of veterinary officers in management of livestock during flood

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### Abstract

India is the second most flood-affected country after Bangladesh. Karnataka has experienced severe floods earlier also during the last two decades. Keeping the above in view, there is a need to understand the effect of flood on livestock production. Therefore, the present study entitled "A critical study on effect of flood on livestock production in northern districts of Karnataka" was taken up. The study was conducted purposively in Belagavi and Kalaburgi division of Karnataka. The data collection was done during the month of November and December 2021 by personal interview method with the help of a pretested schedule in two divisions of north Karnataka with 160 respondents each making a total of 320 respondents. The results indicated that the majority of the veterinary officers were middle aged (45.00%), 67.50 per cent had BVSc & AH qualification and majority of the respondents received high level of information sources regarding the occurrences of flood (72.50%) and majority of the veterinary officers got information two days prior the occurrence of flood (47.50%) and majority of the veterinary officers adopted high livestock management measures (72.50%). The first and foremost constraint faced by veterinary officers during flood was outbreak of different contagious diseases (MS 74.15). The least constraint was difficulty in identification of missing animals (MS 21.57). These findings help the policy makers to develop area specific mitigation and rehabilitation measures for better management of livestock. The findings would help in arranging awareness camps in villages and training programmes to different stake holders for strengthening the managerial measures to be taken during the flood.

**Keywords:** Flood, Livestock, Veterinary Officers, Management, Constraints

A short running title: Veterinary Officers' role during flood

### Introduction

Livestock is one of the fastest growing agricultural subsectors in developing countries. It also

provides employment to about 8.8 per cent of the population in India (Basic animal husbandry statistics, 2018-19). Livestock sector contributes to an extent of 4.11 per cent to the total GDP and 25.60 per cent of total Agriculture GDP (Livestock census 20th, 2019) of the country. India is prone to disasters due to natural and human induced factors like topographic features, geo-climatic conditions, environmental degradation, population growth, industrialization, urbanization, flawed development practices, etc. (Kumar, 2016). Over 40 million hectares (12 % of total land) are prone to flood and river erosion and 5700 km of 7,516 km long coastline is prone to cyclones and tsunamis while 68 % of the cultivable area is vulnerable to drought (NDMA, 2007; Das and Dey, 2011; Bhanja, 1999).

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During 1980 to 2009, on an average about 50 million people in the country were affected by one or the other disasters every year (Sharma and Ashutosh, 2012).

India is one of the most disaster prone countries in the world which is mainly due to its high geo-climatic conditions as well as its higher degree of social vulnerability (Rasool et al. 2021). Livestock in particular have remained highly vulnerable to almost all sorts of natural disasters but the most frequent and vulnerable of all types is the occurrence of flood (IFRC, 2000). The principle reason for flood lies in natural ecological system which includes monsoons, highly silted river systems and steep and highly erodible mountains particularly seen in northern regions (IGWAID, 2008). Reduced feed quantity and quality, changes in pest and disease prevalence, and direct production degradation owing to physiological stress all contribute to have a major impact on livestock systems (Ashraf et al. 2013). The most significant losses in Asia were expressed after flood which when considered at country level showed that India was most affected by crop and livestock production losses after repeated floods between 2004 -2013 (Acharya, 2016). The annual flood damage increased nearly 40 times from the 1950s to the 1980 (Gupta et al., 2003). Each year, an average of 7.35 million hectares of land is affected, 1793 human lives are lost, 85,599 cattle are killed, and 1,452,904 houses damaged. The total loss caused by flood amounts to US \$575 million (Dutta & Watts, 2010).

Disasters affecting livestock can therefore have a negative impact on the infrastructure of a country, reducing an important source of income in rural areas and hindering the distribution of food and goods (Sen and Chander, 2003). The extent and level of flood-induced damage depends on the characteristics of the affected people and infrastructure condition of the area (Choudhury et al., 2011). Farmers consider the adoption of insurance policies too expensive to protect against losses of capital, production, machinery and plants in the case of natural calamities, such as flood events (ISMEA, 2018). Karnataka has experienced severe floods earlier also during the last two decades. Keeping the above in view, there is a need to understand the role of veterinary officers in livestock production during flood. Therefore, the present study entitled "Role of veterinary officers in management of livestock during flood and constraints faced by them during flood" was taken up.

## Materials and Methods

For this study, the state of Karnataka was purposively selected for the study because the researcher belonged to the state. The study was conducted purposively in Belagavi and Kalaburgi division of Karnataka. Belagavi division comprises the districts of Bagalkot, Belagavi, Bijapur, Dharwad, Gadag, Haveri and Uttara kannada. Kalaburgi division comprised the districts namely Ballary, Bidar, Kalaburgi, Koppal, Raichur, Yadgiri and Vijayanagar. Both purposive and random sampling techniques were followed for selecting the respondents for the study. The divisions, districts and taluks were selected purposively whereas random sampling technique was adopted in selection of villages and respondents. The data collection was done during the month of November and December 2021 by personal interview method with the help of a pretested schedule in two divisions of north Karnataka with 160 respondents each making a total of 320 respondents. The data were subjected to frequency and percentage analysis.

### *Garrett's ranking technique*

The factors determining the economic value of Khillar breed and problems in Khillar cattle marketing were identified using Garrett's ranking technique (Garrett, 1979). According to this technique the respondents were asked to rank the list of ten problems. The order of merit thus, given by the respondents was converted into ranks by using the following formula;

$$\text{Per cent position} = 100 * (\text{Rij} - 0.50) / \text{Nj}$$

Where, Rij = Rank given for the ith problem by jth individual

Nj = Number of constraints/problems ranked by jth individual.

The per cent positions thus, obtained were converted into scores by referring the table given by Garrett. Then for each problem the scores of individual respondents were added and divided by the number of respondents. The main score for all the problems were arranged and thus, rank were assigned to the problems.

## Results and Discussion

### *1. Personal profile of veterinary officers*

It was observed from the Table 1 that, among the respondents of Belagavi division the majority of the respondents were middle aged (45.00%), followed by young age (35.00%) and old age (20.00%). Similarly among the respondents from Kalaburgi division,

majority of the respondents were middle aged (45.00%) followed by young (30.00%) and old aged (25.00%). Among the total respondents, large number of the respondents belonged to middle age (45%), followed by young (34.06%) and old age group (16.25%). These observations are in line with Sandikaet al., (2007) and contrary to Ratnayake (2012). Majority of the Veterinary Officers Belagavi division (80.00%) and Kalaburgi division (85.00%) were men, whereas only 20.00 per cent and 15.00 per cent were women. Among the total respondents of the study area, majority were men (82.50%) followed by women (17.50%). The results revealed that, 60.00 per cent of Belagavi division respondents were B.V.Sc. & A.H. qualified, whereas 35.00 per cent were M.V.Sc. qualified and only 5.00 per cent possessed PhD as educational qualification. Similarly from Kalaburgi division majority of respondents were BVSc

& AH qualified (75.00%) and one fourth of the respondents were qualified M.V.Sc. (25.00%). None had PhD educational qualification. Among the total respondents 67.50 per cent had BVSc qualification, followed by M.V.Sc. (30.00%) and only 2.50 per cent had Ph D as educational qualification.

This could be due to the fact that the minimum entry level qualification required for the posts is B. V. Sc. & A. H. At the same time, the promotional priority and provision of incremental allowances does not exist upon acquisition of any higher qualification as these were purely based on experience. These findings are in consonance with Biradar (2009) and Ratnayake (2012).

#### 2. Sources of information and Time of early warning

It was observed, that regarding sources of information about the occurrence of flood received by the veterinary officers, majority of the respondents

Table 1: Profile of Veterinary Officers

S. No.	Category	Belagavi division (N=20)		Kalaburgi division (N=20)		Total (N=40)	
		F	%	F	%	F	%
<b>I Age</b>							
1.	Young age(up26 to 35 years)	7	35.00	6	30.00	13	32.50
2.	Middle age(35 to 50 years)	9	45.00	9	45.00	18	45.00
3.	Old age(above50 years)	4	20.00	5	25.00	9	22.50
<b>II Gender</b>							
1.	Men	16	80.00	17	85.00	33	82.50
2.	Women	4	20.00	3	15.00	7	17.50
<b>III Education</b>							
1.	BVSc	12	60.00	15	75.00	27	67.50
2.	MVSc	7	35.00	5	25.00	12	30.00
3.	Ph D	1	5.00	0	0	1	2.50

Table 2: Source of information and time of early warning

S. No.	Category	Belagavi division (N=20)		Kalaburgi division (N=20)		Total (N=40)	
		F	%	F	%	F	%
<b>1. Source of information about the occurrence of flood</b>							
	Low (6-9)	1	5.00	1	5.00	2	5.00
	Medium (10-14)	5	25.00	4	20.00	9	22.50
	High >14	14	70.00	15	75.00	29	72.50
<b>2. Time of early warning</b>							
	One day	2	10.00	6	30.00	8	20.00
	Two days	10	50.00	9	45.00	19	47.50
	3 days	5	25.00	1	5.00	6	15.00
	>4 day	3	15.00	4	20.00	7	17.50
	None	-	-	-	-	-	-

received high level of information (70.00% & 75.00%) both from Belagavi and Kalaburgi divisions respectively, followed by medium (25.00% & 22.00%) and low level of information sources (5.00%) in both the divisions. Among the total respondents, majority of the respondents received high level (72.50%) of information sources regarding the occurrences of flood, followed by medium (22.50%) and low level (5.00%). Because all the respondents are graduated and there was increase in usage of social media and also receive the information from meteorological department the above trend was observed (Table 2).

From the Belagavi division, majority of the Veterinary Officers got information two days prior (50.00%) the occurrence of flood, followed by three days prior (25.00%), more than 4 days prior (15.00%) and one day prior (10.00%). Similarly from the Kalaburgi division majority of the respondents got information two days prior (45.00%) the occurrence of flood, followed by one day prior (30.00%), more than 4 days (20.00%), and three day prior (5.00%). Among the total Veterinary Officers majority of the respondents got information two days prior (47.50%) the occurrence of flood, followed by one day prior (20.00%), more than 4 days (17.50%), and three days prior (15.00%) about the occurrence of flood. This is mainly due to the fact that providing the timely information about the occurrence of flood by meteorological department and also got the information from Karnataka state natural disaster monitoring center about the occurrence of rain fall.

### 3. Preparatory measures and managerial measures adopted during flood:

It was observed from the Table 3 that, from Belagavi division the majority of veterinary officers have adopted medium precautionary measures

(80.00%), followed by low (15.00%) and high level of precautionary measures (5.00%). Similarly, in Kalaburgi division, about 75.00 per cent of respondents have adopted medium level of precautionary measures followed by low (20.00%) and high level of precautionary measures (5.00%). Among the total respondents about 77.50 per cent of respondents have adopted medium level of precautionary measures followed by low (17.50%) and high level of precautionary measures (5%). This could be due to the fact that most of the Veterinary Officers identified the temporary shelter place for the livestock and also storage of feed and fodder to the livestock and also storage of emergency medicines to treat the animals.

It was revealed (Table 3) that, about 70.00 per cent and 75.00 per cent of Belagavi and Kalaburgi division Veterinary Officers adopted high livestock management measures during the flood, followed by medium (25.00% & 20.00%) and equal per cent of veterinary officers from both Belagavi and Kalaburgi division adopted low level during the flood (5.00%).

Among the total respondents, majority of the Veterinary Officers adopted high livestock management measures (72.50%), followed by medium level (22.50%) and low level (5.00%), because Veterinary Officers conducted the health camps at temporary shelter place and also isolated the sick and healthy animals to reduce the disease transmission.

### 4. Constraints faced by Veterinary Officers during the flood

It was evident from the Table 4, that in Belagavi division the first and foremost constraint faced by Veterinary Officers was outbreak of different contagious diseases (MS 74.80) and second constraint was isolation of sick and healthy animals (MS 74.05). Lack of adequate staff (MS 66.65) was ranked as the

Table 3: Preparatory measures and managerial measures adopted by Veterinary Officers

S. No.	Category	Belagavi division (N=20)		Kalaburgi division (N=20)		Total (N=40)	
		F	%	F	%	F	%
1.	Preparatory measures						
	Low(7-13)	3	15.00	4	20.00	7	17.50
	Medium(14- 16)	16	80.00	15	75.00	31	77.50
	High>16	1	5.00	1	5.00	2	5.00
2	Management of livestock						
	Low(5-8)	1	5.00	1	5.00	2	5.00
	Medium(9- 12)	5	25.00	4	20.00	9	22.50
	High>12	14	70.00	15	75.00	29	72.50

Table 4: Constraints faced by Veterinary Officers during flood

S.No.	Constraints	Belagavi division(N=20)		Kalaburgi division(N=20)		Total(N=40)	
		Mean Score	Rank	Mean Score	Rank	Mean Score	Rank
1.	Isolation of sick and healthy animals	74.05	II	72.60	II	73.32	II
2.	Lack of adequate staff	66.65	III	64.85	III	65.70	III
3.	Improper storage facilities for medicines and vaccines	26.85	IX	35.40	VII	31.12	IX
4.	Outbreak of different contagious diseases	74.80	I	73.50	I	74.15	I
5.	Difficulties in communication with other staff or official located in distant areas	28.40	VIII	35.00	VIII	31.7	VII
6.	Difficulty in Identification of missing animals	22.40	X	20.75	X	21.57	X
7.	Proper disposal of carcass during the flood	52.25	V	54.45	IV	53.35	V
8.	Lack of transportation facilities to veterinarians	49.50	VI	49.25	VI	49.37	VI
9.	Lack of training facilities about the proper planning and management of livestock during flood	30.85	VII	32.35	IX	31.60	VIII
10.	Distribution of feed and fodder among the livestock farmers in temporary shelter area	57.05	IV	50.05	V	53.55	IV

third constraint. The fourth constraint was distribution of feed and fodder among the livestock farmers in temporary shelter area (MS 57.05) and proper disposal of carcass during the flood (MS 52.25) was ranked as the fifth constraint.

The sixth constraint was lack of transportation facilities to veterinarians (MS 49.50) and lack of training facilities regarding the proper planning and management of livestock during flood (MS 30.85) was ranked as seventh constraint. The eighth constraint was difficulties in communication with other staff or official located in distant areas (MS 28.40) and improper storage facilities for medicines and vaccines (MS 26.85) was ranked as ninth. Difficulty in identification of missing animals was ranked as last constraint faced by Veterinary Officers (MS 22.40).

Similarly among Kalaburgi division the first and fore most constraint faced by Veterinary Officers was outbreak of different contagious diseases (MS 73.50) followed by isolation of sick and healthy animals (MS 72.60), lack of adequate staff (MS 64.85), proper disposal of carcass during the flood (MS 54.45), distribution of feed and fodder among the livestock farmers in temporary shelter area (MS 50.05), lack of transportation facilities to veterinarians (MS 49.25) and improper storage facilities for medicines and vaccines (MS 35.40), difficulties in communication with other staff or official located in distant areas (MS 35.00), lack of training facilities about the proper planning and management of livestock during flood (MS 32.35) and difficulty in identification of missing animals (MS

20.75).

Among the total respondents the first and foremost constraint faced by veterinary officers during flood was outbreak of different contagious diseases (74.15) followed by isolation of sick and healthy animals (73.32), lack of adequate staff (65.70), distribution of feed and fodder among the livestock farmers in temporary shelter area (53.55), proper disposal of carcass during the flood (53.35), lack of transportation facilities to veterinarians (49.37), difficulties in communication with other staff or official located in distant areas (31.70), lack of training facilities about the proper planning and management of livestock during flood (31.6), improper storage facilities for medicines and vaccines (31.12) and difficulty in identification of missing animals (21.57). It could be due to the fact that spreading of different diseases like foot rot, haemorrhagic septicaemia etc will be more due to flood, there was non availability of vaccines and required medicines.

### Conclusion

The present study entitled "Role of veterinary officers in management of livestock during flood and constraints faced by them during flood" revealed that the majority of the veterinary officers were middle aged(45.00%), 67.50 per cent had BVSc& AH qualification and majority of the respondents received high level of information sources regarding the occurrences of flood (72.50%) and majority of the veterinary officers got information two days prior the occurrence of flood (47.50%) and majority of the

veterinary officers adopted high livestock management measures (72.50%). The first and foremost constraint faced by veterinary officers during flood was outbreak of different contagious diseases (MS 74.15) followed by isolation of sick and healthy animals (MS 73.32) and lack of adequate staff (MS 65.70). The least constraint was difficulty in identification of missing animals (MS 21.57). These findings help the policy makers to develop area specific mitigation and rehabilitation measures for better management of livestock. The findings would help in arranging awareness camps in villages and training programmes to different stake holders for strengthening the management measures to be taken during the flood.

Conflict of Interest: NO

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