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A study of economic losses suffered by livestock farmers during the floods of 2014 in Jammu and Kashmir (India)

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Abstract

India is one of the most disaster prone countries in the world, affecting overall 85% of Indian land and more than fifty million people. There has been an increase in the frequency and intensity of disasters that has posed a threat not only to the people but to livestock as well. Livestock in particular have remained highly vulnerable to almost all sort of natural disaster but the most frequent and vulnerable of all types is the occurrence of flood. The state of Jammu and Kashmir was hit by severe floods in year 2014 which left a great impact on people as well as on the livestock. The present study was purposively designed and carried out in three flood affected districts of Kashmir Division namely Pulwama in South, Srinagar in Central and Bandipora in North of Kashmir based on maximum inundation levels reported from these areas. The results depicted that there was a loss of 1-3 cattle/buffalo per household during the floods of 2014 with maximum herd loss of cattle/buffalo reported from Pulwama District (42-82%). With respect to small ruminants there was an average loss of two sheep/goat per household with highest flock loss reported from Bandipora District (>92%). A minimum loss of 1-8 sheep and goat per household was reported by some respondents (39.58%). With respect to backyard poultry, sizeable portion of respondents (39.16%) reported to have a loss of greater than 81% with the highest loss (>81%) from Pulwama District. The findings of the study revealed that the preparedness, response and recovery mechanisms were not adequate thus making the condition aggravated causing maximum casualty of animals and huge economic losses to livestock farmers of the state.

Keywords: Disaster, Flood, Livestock, Economic Losses

Introduction

The Livestock sector plays a central role in nature resource based livelihood of the vast majority of population and often considered as the poor people's ATM. About 70 percent of the livestock is owned by 67 percent of the small, marginal and landless people thereby contributing 25.6 percent of agricultural output (40% if draught and dung is also accounted for) and 4.11 percent of total GDP (19th Livestock census, 2012). Livestock are usually kept as unit of production and serve as a means of drought power, thus any negative effect on livestock will in turn not only affect the infrastructure but also will create difficulty in distribution of foods and goods within and outside the country (Health *et al.*, 1999). Besides any negative impact on this sector can also reduce the important source of employment, revenue and wealth. Despite its immense contribution in economy of the nation the livestock sector is facing many difficulties in terms of ill health, low productivity, unavailability of feeds and forages, poor infrastructure, increased incidence of emerging and re-emerging diseases and the most drastic being the natural calamities/disasters (National Livestock Policy, 2013). The occurrence of any natural disaster aggravates the economy of nation by leaving direct and indirect effect on livestock as well on their owners (Thole *et al.*, 1993) ^[12]. Livestock population is the first to be affected in any precarious situation caused due to any natural calamity and is the second most affected subsector after crops accounting for USD 11 billion or 36 percent of all the damages and losses reported (FAO, 2015) ^[5]. Among the natural calamities, floods and drought account for 83 percent of total crop and livestock production losses among which 44 percent of production losses are caused by drought and 39 percent losses are caused by floods (FAO, 2015) ^[5]. 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 (Shah *et al.*, 2017) ^[11].

Floods have always brought miseries to numerous people, especially in rural areas across the

country and the state of Jammu and Kashmir being no exception to it. Owing to the unique geographical setting, the state of Jammu and Kashmir has witnessed a multitude of disasters (J&K State Disaster Management Policy, 2011) the most recent one being the floods of 2014. The state had experienced its worst flood since 60 years during the first week of September 2014 which was mainly due to unprecedented and intense rains. Heavy rainfall caused flash flooding with localized damage across the state along with landslides which impacted road connectivity (Agarwal *et al.*, 2014) [1]. Thousands of villages and many urban areas were submerged into 10 to 30 feet of water causing loss of life, livestock and destruction of houses, public infrastructure, lifeline structures and loss of business (Anonymous, 2014a) [1]. As per (DEE&RS, 2014) [4] more than 280 people were reported dead, about 10,136,063 population were severely affected and 543,379 houses had been completely displaced and flooded in 2014 floods. The state had recorded an estimated 1.57 percent drop in GDP due to the floods of 2014 which otherwise had been constantly increasing since 2004 (Anonymous, 2014b) [3]. The devastating floods left a major impact on livestock, with the losses of Cattle, Sheep and Goats thereby hindering the state's economy. Large animal losses above 7000 were recorded besides the total number of Sheep that perished in the disaster were 65,000. In addition to this, nearly 500,000 Sheep and Goats were severely affected due to lack of fodder and 99305 huts and cowsheds were completely destroyed in floods (Shah *et al.*, 2017) [11]. In spite of all these figures there was a lack of empirical study on the exact impact of floods of 2014 on the livestock sector of the region. So this paper elaborates the various economic losses suffered by livestock farmers during the flood turmoil in year 2014 in Jammu and Kashmir, India.

2. Materials and Methods

The present study was purposively carried out in Kashmir Division of Jammu and Kashmir state that was severely hit by a devastating flood in September 2014. Among the various flood affected districts of Kashmir Division, the three districts namely Bandipora, Srinagar and Pulwama were purposively selected based on the highest inundation levels reported in these areas. The Kashmir Division of Jammu and Kashmir State consists of 10 districts. The present study was

purposively carried out in three severely flood affected districts namely Pulwama in south, Srinagar in central and Bandipora in north of Kashmir. From each selected district two (2) flood affected blocks were purposively selected based on their livestock population for data collection from affected farmers. Further from each selected block four (4) affected villages were randomly selected for questioning of respondents. Finally ten (10) affected farmers were randomly selected from each of the selected village making a total of two hundred and forty respondents.

3. Results and Discussion

3.1 Economic losses

With regard to economic losses met to large animal's, majority of the respondents (76.67%) had a damage to their livestock with a loss of 1-3 cattle/buffaloes per household. On an average there was a loss of 1.41 cattle/buffalo per household from the area of study (Table 1). Further it was found that there was no loss of sheep and goat during the floods of 2014 as reported by majority of respondents (56.25%). However a sizeable portion of respondents (39.58%) reported that there was a minimum loss of 1-8 sheep and goat per household. The results also pointed out that no higher loss with respect to sheep/goat was reported from Srinagar district. With respect to backyard poultry, half of the respondents (50.83%) reported that there was no loss of backyard poultry during the floods of 2014. Amongst those who suffered a loss, a sizeable portion of respondents (32.50%) reported to have a minimum loss of 1-10 poultry birds per household during that period. A higher loss of 7 poultry birds/household was reported from Pulwama District. As per the report of department of animal husbandry Kashmir (Table 2) the total number of cattle that died during the floods of 2014 was 7944 which included 4336 Milch animals, 3591 Draught animals and 17 calves. The report of sheep husbandry department, Jammu and Kashmir, India indicated that there was a loss of 79,855 sheep/goat during the floods of 2014. The total numbers of sheep/goats injured were 446120 and the total numbers of animal sheds damaged were 360 (Table 3). The findings with respect to economic losses suffered in the study areas more or less agree with the data given by department of animal/sheep husbandry with respect to losses.

Table 1: Distribution of respondents with respect to economic losses suffered by livestock farmers in the form of death/loss of livestock in floods of 2014, N=240

No. of animals died/lost in flood	Districts			Total
	Srinagar	Bandipora	Pulwama	
Cattle / Buffalo				
1-3	57 (71.25)	54 (67.50)	73 (91.25)	184 (76.67)
4-6	3 (3.75)	4 (5.00)	1 (1.25)	8 (3.33)
7-9	1 (1.25)	0 (0.00)	0 (0.00)	1 (0.42)
Nil (No loss of Cattle/Buffalo)	19 (23.75)	22 (27.50)	6 (7.50)	47 (19.58)
Mean ±S.D	1.52±1.39	1.25±1.09	1.47±0.85	1.41±1.13
	Sheep & Goat			
1-8	16 (20.00)	44 (55.00)	35 (43.75)	95 (39.58)
9-16	1 (1.25)	5 (6.25)	2 (2.50)	8 (3.33)
17-24	0 (0.00)	1 (1.25)	1 (1.25)	2 (0.83)
Nil (No loss of Sheep/Goat)	63 (78.75)	30 (37.50)	42 (52.50)	135(56.25)
Mean± S.D	0.33±1.17	3.00± 3.77	1.65± 3.13	1.66±3.09
	Poultry (Backyard)			
1-10	25 (31.25)	23 (28.75)	30 (37.50)	78 (32.50)
11-20	4 (5.00)	11 (13.75)	12 (15.00)	27 (11.25)
>20	3 (3.75)	3 (3.75)	7 (8.75)	13 (5.41)
Nil (No loss of Poultry)	48 (60.00)	43 (53.75)	31 (38.75)	122 (50.83)
Mean± S.D	3.60±6.71	4.62±7.19	7.37±10.45	5.20±8.40

(Figures in parenthesis indicate percentage)

Table 2: Details of the report on livestock loss in floods of 2014 from department of Animal Husbandry Kashmir.

District	Animals dead			
	Milch	Draught	Calves	Total
Srinagar	846	465	0	1311
Bandipora	1028	1063	0	2091
Kupwara	1447	1636	17	3100
Ganderbal	142	13	0	155
Shopian	77	72	0	149
Anantnag	796	342	0	1138
Total	4336	3591	17	7944

Table 3: Details of the report of livestock loss in floods of 2014 from department of Sheep Husbandry Kashmir

S.no	District	Number of Sheep/Goat Lost	Tentative cost of animals lost@5500/-	Number of Sheep/Goat injured	Number of animal sheds damaged	Animal health care camps conducted
1.	Baramulla	11688	64284000	95000	48	07
2.	Bandipora	10856	59708000	41235	35	04
3.	Kupwara	6118	33649000	24000	15	05
4.	Ganderbal	1147	6308500	17000	70	10
5.	Srinagar	7330	40315000	30793	30	07
6.	Budgam	4875	268125000	16835	40	03
7.	Pulwama	7018	38599000	90000	25	04
8.	Kulgam	6561	36085500	26412	42	06
9.	Anantnag	10882	59851000	85000	40	07
10.	Shopian	13380	73590000	19845	15	05
Total		79855	680515000	446120	360	58

3.2. Herd loss (Cattle/Buffero)

The findings in the below given Table 4 indicate that majority of the respondents (45.00%) had a herd loss of 42-82% cattle/buffalo per household during the floods of 2014 with more than half of the respondents (53.75%) reported to have higher loss of Cattle/buffalo from Pulwama District.

3.3. Flock loss (Sheep/Goat)

The results depict that there was no loss of sheep/goat during the floods of 2014 as reported by more than half of the respondents (56.25%). However a sizeable portion of respondents (32.92%) reported to have a flock loss of more than 92% sheep/goat during that period. Overall Bandipora District was found to have a major flock loss (>92%) during

the floods of 2014 as reported by respondents (46.25%).

3.4. Poultry loss (Backyard)

The result of the Table 4 indicate that half of the respondents (50.83%) had no loss of backyard poultry during the floods of 2014. However a sizeable portion of respondents (39.16%) reported to have a poultry (backyard) loss of greater than 81% with the highest loss (>81%) from Pulwama District as reported by more than half of the respondents (55.00%). The results overall show the severity of floods and the impact that floods had on livestock owners. Moreover it also depicts the lack of awareness as well as lack of preparedness of the respondents to deal with such kind of disaster.

Table 4: Distribution of herd losses per household with respect to large/small ruminants including backyard poultry during the floods of 2014, N=240

%age of herd loss (Cattle/buffalo)	Districts			Total
	Srinagar	Bandipora	Pulwama	
Nil	19 (23.75)	22 (27.50)	6 (7.50)	47 (19.58)
1-41%	4 (5.00)	13 (16.25)	17 (21.25)	34 (14.17)
42-82%	32 (40.00)	33 (41.25)	43 (53.75)	108 (45.00)
>82%	25 (31.25)	12 (15.00)	14 (17.50)	51 (21.25)
%age of flock loss (Sheep/goat)				
Nil	63 (78.75)	30 (37.50)	42 (52.50)	135 (56.25)
1-46%	2 (2.50)	3 (3.75)	2 (2.50)	7 (2.92)
47-92%	5 (6.25)	10 (12.50)	4 (5.00)	19 (7.92)
>92%	10 (12.50)	37 (46.25)	32 (40.00)	79 (32.92)
%age of poultry loss (Backyard)				
Nil	48 (60.00)	43 (53.75)	31 (38.75)	122 (50.83)
1-41%	1 (1.25)	7 (8.75)	1 (1.25)	9 (3.75)
42-81%	5 (6.25)	6 (7.50)	4 (5.00)	15 (6.25)
>81%	26 (32.50)	24 (30.00)	44 (55.00)	94 (39.16)

(Figures in parenthesis indicate percentage)

4. Conclusion

Massive flooding can often have a devastating impact on the economy of a region and the livelihood of its people. Loss of human life, property damage, destruction of crops, loss of

livestock, non-functioning infrastructure facilities are some ways a flood can impact upon a community. The expenses of this natural disaster can cost billions of dollars and reduce the productivity in areas affected by floods. The Similar situation

was observed in Kashmir division due to floods of September 2014 with an overall estimated loss of greater than one trillion to the economy (Saleh *et al.*, 2017). The livestock sector was also hit hard as revealed from the findings of the study. Amongst the various flood affected Districts, Pulwama District had the maximum herd loss of cattle and Buffalo (42-82%) with the average loss of 1-3 Cattle/buffalo per household from all the three respective districts. Further it was found that there was no loss of sheep and goat during the floods of 2014 as reported by majority of respondents (56.25%). However a sizeable portion of respondents (39.58%) reported that there was a minimum loss of 1-8 sheep and goat per household. With respect to backyard poultry, sizeable portion of respondents (39.16%) reported to have a loss of greater than 81% with the highest loss (>81%) from Pulwama District. The findings of the study gave a glimpse about the existing situation in the Kashmir Valley in context to disaster planning and mitigation measures. The results revealed that the preparedness, response and recovery mechanisms were not adequate which aggravated the condition and caused maximum casualty of animals and huge economic losses in terms of loss of livestock, damage to various infrastructure and available resources to farmers of the state which directly or indirectly affected their livelihood.

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