Analyzing Dairy Farmer's Perceptions of Constraints in the Ernakulam and Thrissur Districts of Kerala During the 2018 Floods

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ABSTRACT

An ex post facto investigation was conducted to study the constraints perceived by flood affected dairy farmers of Ernakulam and Thrissur districts. Total of 150 livestock farmers were selected from both districts. The information generated through farmer-research interaction formed the items for the structured interview schedule that was used for data collection. A total of 23 such items were generated and these were edited appropriately and grouped under five broad domains *viz.* economic, communication, technical, infrastructural and socio-psychological constraints before being included in the structured interview schedule. Data were collected by personal interviews on the homestead of the farmers during the months of October, November and December, 2020. Analysis of the data indicated that the high cost of feed and fodder (100%), the non-availability of green fodder during the floods (100%) and feelings of depression among studied farmers (100%) were perceived to be the most important constraints by them. Among the domains the most important constraints perceived by the respondent farmers were economic constraints followed by technical constraints, communication constraints, infrastructural constraints and psychological constraints in the said order. The study sheds light on the importance of both economic inputs coupled with technical support and capacity building among the dairy farmers so as to equip them to face any calamites in future.

HIGHLIGHTS

◉ Study covered the constraints of 150 dairy farmers in 20 villages due to flood.
◉ Variables were collected through personal interview, analyzed with appropriate statistical techniques and grouped in five domains.

Keywords: Flood, Dairy farmers, Constraints

Rainfall in Southern Indian state of Kerala is controlled by the South-West and North-East monsoons and about 90 per cent of the rainfall occurs during the six monsoon months. Kerala is ecologically sensitive, owing to the peculiar geography and topography unique to the region. Practically, the entire state serves as a drainage medium for run-offs from the Western Ghats towards the Arabian Sea. As a result, the state has a dense network of rivers linking the hills to the sea. The year 2018 remains etched in the history of this state. Kerala experienced abnormally high rainfall from 1st June, 2018 to 19th August, 2018. This resulted in severe flooding in thirteen of the fourteen districts of the state. As per the data from the Indian Meteorological Department, Kerala received 2346.6 mm of rainfall from 1st June 2018 to 19th August, 2018, in contrast to an expected 1649.5 mm of rainfall (Mishra *et al*., 2018).

The rainfall was about 42 per cent above normal. This devastating phenomenon saw the loss of 400 human lives along with nearly 12,000 dairy animals and destruction of about 57,000 hectares of cultivated land. According to the Government of Kerala, one-sixth of the total population of Kerala had been directly affected by the floods and related incidents. The Indian Government declared the floods in Kerala a Level 3 Calamity or "calamity of a severe nature". This flood was the worst flood that the state of Kerala had experienced after 'the great flood of 99' that took place in 1924. This phenomenon resulted in heavy losses for the livestock sector, especially the dairy sector. No follow-up study was carried out in the study locale to record the consequences of the natural calamity in the life of the dairy farmers with relevance to the perceived constraints faced by them. Hence, it was in this context the present study was undertaken to delineate the constraints faced by dairy farmers and suggest strategies to sort these out.

MATERIALS AND METHODS

From the thirteen districts that were reported affected in the state, Thrissur and Ernakulam districts were selected for the study on account of the severity of the flood in these two districts as indicted by the fact that all the villages in both districts had been notified by the Government of Kerala as flood affected (Disaster Management Department, 2018). From the list of 127 and 255 affected villages in Ernakulam and Thrissur districts respectively, a total of ten villages each were selected at random. The list of livestock farmers affected by the floods in the selected villages of both districts were prepared using the data available with the Department of Animal Husbandry, Kerala and the Department of Dairy Development, Kerala from which a total of 75 farmers from Thrissur district and 75 farmers from Ernakulam district were selected, at random, for the study. Items for the constraints faced by farmers were arrived through review of literature and discussions with groups of similar farmers from non-sampling areas of Ollukara panchayat of Thrissur district. The information thus generated through this series of farmer-research interactions formed the basis for arriving at the items for the structured interview schedule that was used for data collection. A total of 23 such items were generated and these were edited appropriately and grouped under five broad domains *viz.* economics, communication, technical,

infrastructural and socio-psychological constraints before being included in the structured interview schedule. The structured interview schedule was then pretested among ten farmers in Ollukara block of Thrissur district before being used for the final study. Data were collected by personal interviews on the homestead of the farmers during the months of October, November and December, 2020.

RESULTS AND DISCUSSION

Economic constraints

Table 1: Economic constraints perceived by dairy farmers

Sl. No.	Constraints	Yes		No	
		f	%	*f*	%
1	High cost of feed and fodder	150	100	0	0
2	Non availability of green and dry fodder	150	100	0	0
3	Inadequate supply of cattle feed	124	82.7	25	17.3
4	No co-operative assured procurement of milk on a daily basis	128	85.3	22	14.7
5	Sale of reproductive animals	69	46	81	54

The most important economic constraints faced by all the farmers before and after the flood were the high cost of feed and fodder and non-availability of green and dry fodder. Kant *et al.* (2015) similarly reported that 98.5 per cent of studied farmers reported that economic constraints were the most important constraints that they faced. The authors further opined that the high price of concentrates and lack of market access were the predisposing factors that naturally eventually resulted in the culmination and manifestation of the economic constraints reported by the studied farmers (Sere *et al.*, 2008). The observations in the present study point to the urgent need for measures by appropriate authorities concerned to initiate steps to preserve fodder in large quantities for farmer use during possible calamities. Bakshi *et al.* (2018) also observed that shortage of fodder was an important problem faced by farmers affected by floods and the authors pointed out that it was of urgent need to ensure the establishment of fodder banks in flood affected areas so that a regular supply of fodder is ensured and production in such a situations is not affected (Abbas *et al.*, 2019).

The failure of the network of milk cooperative societies to provide the respondent farmers with an assurance of daily milk procurement was cited to be a major constraint with economic overtones by over 80 per cent of the respondent farmers. Lal *et al*. (2016) reported that 83.15 per cent of farmers had no cooperatives in their areas, for assured milk procurement on a daily basis. In the present study, it was highly unfortunate that despite the fact that 80 per cent of studied farmers reported having cooperatives in their locality, no systematic plan by the milk marketing authority to address the issue of milk procurement on a daily basis in flood affected areas had been worked out as part of the flood response mechanism. The present study point to the urgent necessity of including such measures in future flood response strategies so that this sector is sustained.

Communication constraints

Table 2: Communicational constraints perceived by dairy farmers

Sl. No.	Constraints	Yes		No	
		f	**%**	*f*	**%**
1	Lack of early warning system	126	84	24	16
2	Unawareness about the information provided by the Central Water Commission and Indian meteorological department	88	58.7	62	41.3

In the present study 84 per cent of farmers were not aware of the early warning system in event of a flood and 58.7 per cent of respondents were unaware about information provided by Central Water Commission and the Indian Meteorological Department. Kant *et al*. (2015) made similar observations and reported that 99.16 per cent of the studied farmers lacked necessary information about the warning systems and water levels from the specific government authorities. Ignorance about crucial information being disseminated for farmers and lack of access to media could have been the reasons for the above constraints. These results point to the lack of a follow up system to ensure that developmental measures are being communicated to target stakeholders. It is highly pertinent that appropriate steps to disseminate all information on such measures taken by various government agencies are taken up by these agencies itself as part of the disaster response system that the government envisages. Without such a mechanism, all measures taken by such government departments and commissions would be defeated.

Technical constraints

Table 3: Technical constraints perceived by the dairy farmers

Sl. No.	Constraints	Yes		No	
		f	**%**	*f*	**%**
1	Lack of awareness and knowledge about importance of vaccination	16	10.7	134	89.3
2	Unable to trace lost animals	42	28	108	72
3	Lack of experience of field staff in management of flood situation	84	56	66	44
4	Delay in availing government veterinary support	108	72	42	28
5	Unable to milk/sale the animals	137	91.3	13	8.7
6	Non availability of high quality semen supply for AI at the farmer's door steps	77	51.3	73	48.7
7	Lack of cattle camps by government	112	74.7	38	25.3
8	Lack of manpower availability	105	70	45	30

The constraint in this domain that was reported by majority of the farmers was the fact that the daily milking schedules of their animals were disrupted by the flood situation. Lal *et al*. (2016) stated that the lack of government policies was the most important technical constraint faced by the farmers. This is in consonance with the present study as 74.7 percent and 51.3 per cent of the respondents reported lack of government cattle camps and delay in providing veterinary support by the government as serious constraints both of which are the fall outs of delay or lack of a robust policy implementation plan. The present observations endorse the suggestion that providing necessary training to the concerned field staff engaged in calamity response programmes of the government could minimise the impact of technical constraints. These staff may also be trained to improvise the calamity response mechanism as the strategies used were perceived to be less efficient by respondent farmers.

Infrastructural constraints

In the present study, unavailability of animal shelters, loss of farm equipment during flood and lack of storage

facilities were important infrastructural constraints perceived by 81.3, 71.3 and 70.7 per cent of respondent farmers respectively (Ghatak *et al.*, 2012).

Table 4: Infrastructural constraints perceived by the dairy farmers

Sl. No.	Constraints	Yes		No	
		f	%	f	%
1	Lack of storage facilities	106	70.7	44	29.3
2	Lack of ambulance outreach facility	82	54.7	68	45.3
3	Unavailability of animal shelters	122	81.3	22	18.7
4	Loss of farm equipment due to flood	107	71.3	43	28.7

Lal *et al*. (2016) also reported that 89.17 per cent of respondents reported that they lacked farm equipment for fodder production and irrigation facilities. Policy intervention to ensure the availability of proper animal shelters in safe areas along with emergency care facilities in event of possible floods should form part of any disaster mitigation plan in the state (Mirza *et al.,* 2003).

Socio-psychological constraints

Table 5: Socio-psychological constraints perceived by dairy farmers

Sl. No.	Constraints	Yes		No	
		f	%	f	%
1	Lack of information how to manage animals	39	26	111	74
2	Lack of knowledge about climate impacts	75	50	75	50
3	Lack education for animal owners in companion-animal and large animal disaster preparedness	99	66	51	34
4	Psychologically depressed by the respondent due to flood loss	150	100	0	0

Lack of knowledge about preparedness for handling animals during disasters coupled with the lack of education on the impact of climate change was reported by 66 per cent and 50 per cent for respondents respectively. Lal *et al*. (2016) also reported that the effect of climate impacts on feeding practices and adaptive measures were highlighted as main sociopsychological constraints by more than 95 per cent of the respondents of that study. In the present study, depression was reported as the most important socio-psychological constraint on account of the huge economic loss post disaster experienced by the studied farmers. All the respondents (100%) revealed that they were severely depressed as their livelihood was affected. Disaster mitigation plans should have long term and short term goals (Paranjothy *et al.,* 2007). The findings of the present study point to the need to provide for measures to sensitise the farming community on the impacts of climate change in addition to measures to disseminate climate safe practices in animal husbandry as part of long term disaster management strategies. In the light of the findings of this study, it is also imperative that disaster management plans provide for farmer compensatory mechanisms as well as measures to address psychological issues.

CONCLUSION

Calamities are perhaps the most serious environmental threat and this study pointed out the fact capacity building among the dairy farmers with respect to preparedness, response, recovery and mitigation strategies have to be done to overcome the constraints. Concerted efforts by various agencies in this sector to create awareness among various stakeholders on sustainable farming practices and environmental consciousness among citizen so as to avert further long term damage to the environment are also warranted. The crucial role of a State Disaster Management Agency liaising with the line departments along with a Disaster rehabilitation plan for the livestock sector that incorporates credit and animal replacement programmes along with the establishment of feed and fodder bank, cattle shelters could go a long way in alleviating problems that could arise in the future in this regard.

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