

## International Journal of Agriculture Extension and Social Development

Volume 7; Issue 3; March 2024; Page No. 20-23

Received: 12-01-2024  
Accepted: 18-02-2024

Indexed Journal  
Peer Reviewed Journal

### Adoption of health care and feeding management practices by the flood affected dairy farmers

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DOI: <https://doi.org/10.33545/26180723.2024.v7.i3a.392>

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#### Abstract

Flood is one of the natural calamities which disturbs farmers livelihood and management of dairy farms. The study was conducted to analyze the adoption of various health and feeding practices adopted by the dairy farmers during normal and flood period. A total of 60 respondents were selected from Belgaum district using purposive random sampling method. The findings indicated that sanitization of animal shed by insecticidal spray was fully adopted by 56.66 percent, 38.33 percent partially adopted in normal period while, 26.67 percent fully adopted and 43.33 percent partially adopted in flood period. The results also revealed that majority (71.67%) of the farmers fully adopted use of silage or hay technology Whereas, only 23.33 percent fully adopted during flood period. More than half (51.66%) of the dairy farmers practiced feeding crop residues followed by, 45.00 percent partially adopted during normal period while, 63.33 percent fully adopted and 36.67 percent partially adopted during flood period.

**Keywords:** Adoption, health care, feeding management, flood, dairy farmers

#### Introduction

India produces and consumes the major quantity of milk in the world. Dairy production generated over 4.20 percent of India's Gross Domestic Product (GDP) as of 2020. Milk production has increased from 146.3 million tonnes in 2014–15 to 198.4 million tonnes in 2019–20 (Anonymous, 2021) <sup>[4]</sup>. Two thirds of rural communities rely on cattle for their livelihood. About 8.80 percent of the population in India is employed in dairy sector. The great majority of people depend on natural resources for their livelihood, and the livestock industry is sometimes seen as the ATM for the poor. They serve as a vital source of income, employment, and wealth and are kept as a unit of production (Rasool *et al.*, 2021) <sup>[9]</sup>. Livestock is the second most impacted subsector after crops, accounting for USD 11 billion, or 36% of all damage and losses reported in the post-disaster needs assessments (Anonymous, 2015) <sup>[2]</sup>.

Between 1995 and 2015, worldwide, flood occurrences were responsible for 47 percent of all weather-related disasters and 25 percent of all economic damage brought on by natural disasters (Anonymous, 2016) <sup>[3]</sup>. It is clear that in 26 years, Bihar, West Bengal, Assam, Manipur, and Tripura had more than 20 times as many floods (Anil *et al.*, 2021) <sup>[1]</sup>. In India, floods have been a frequent occurrence of nature. Almost yearly, different regions of the country are affected by floods of differing sizes during the monsoon season. India has frequently experienced floods that caused significant economic and human losses.

In case of flood, displacement of dairy farmers leads to lack of fodder availability for dairy animals whereas in drought period shortage of feed and fodder is faced as major problem by the dairy farmers. The harm to livestock caused by the floods in developing nations is quite high in terms of assets washed away as well as farm power are lost affecting availability of them during flood. Farmer suffers heavily for want of basic facilities like food and shelter.

The lack of food and shelter poses as threat to animals that have survived these disasters. In the same way that other agricultural crops are destroyed entirely, so are fodder fields. These animals are stressed and immune-suppressed due to lack of food and shelter, making them more vulnerable to infections. People are forced to abandon their livestock due to a lack of clean water and high disease incidence. Keeping this in view the present study was carried out with an objective of studying the disease management practices adopted by the dairy farmers during flood.

#### Methodology

The study was conducted in Belgaum district of North Karnataka in the year 2021-22. As Belgaum experienced flood during 2021, that district was considered for the study. Sixty farmers from the district i.e., Thirty farmers from two taluks *viz.*, Gokak and Ramdurg were selected by using purposive random sampling method, constituting a total sample of 60 respondents.

## Adoption

Adoption was operationally defined as the extent to which the respondents has adopted dairy management practices.

### Measurement of adoption

Based on the review of literature and consultation with the animal scientists of the University of Agricultural Sciences, Dharwad, the important practices of dairy management were taken to know the extent of adoption. The management practices were studied under following sub heads i.e., Health and vaccination, care and management practices and feeding management, and disease management. The responses provided by the respondents were measured as full adoption, partial adoption and non-adoption of dairy management practices with scores of 2, 1 and 0 respectively. The following score was given for full adoption, partial adoption and non-adoption the dairy management practices.

| Items              | Score |
|--------------------|-------|
| Full adoption      | 2     |
| Partially adoption | 1     |
| Non-adoption       | 0     |

## Results and Discussion

### Health and vaccination

The practices like regular deworming was fully adopted by all in normal period while 86.67 percent fully adopted regular deworming during flood period followed by, stock emergency common medicine (10.00%) which was followed during normal period and 13.33 percent fully adopted in flood period. Sanitization of animal shed by insecticidal spray was followed by 56.66 percent in normal period, while, only 26.67 percent fully adopted in flood period. Around 18.33 percent practiced carcass disposal by burning or burial in normal period and 31.67 percent followed it during flood period whereas 20.00 percent practiced culling of animals during normal period and 16.67 percent followed it during flood period.

Government sends/deputes staff to flood affected areas for deworming, vaccination and check ups but still farmers face lack of access to those veterinary services hence the animals suffer from respiratory infections. So, it is necessary that farmers must take preparatory steps by stocking emergency medicines well ahead of flood, taking sanitary measures and culling non productive animals. Same type of results were reported from Maruti (2015) [8] in his study about women dairy farmers in Bidar district.

### Care and management practices

With respect to care and management of calves, all of the farmers followed feeding of colostrum within 4 hrs. of birth during normal period and 98.33 percent fully adopted during flood period. Majority (80.00%) of them partially adopted providing vaccination to 3 months old animal in normal period whereas, 28.33 percent fully adopted in flood period. This was because of lack of availability of local experts and less access to veterinary hospitals. The findings are in accordance with study of Singh *et al.* (2015) [11] and Krishnamurthy *et al.* (2016) [6].

In case of care and management of pregnant animals, 63.33 percent partially adopted deworming in normal period while, 20.00 percent partially adopted in flood period.

Further 40.00 percent partially adopted providing recommended ration for pregnant animals in normal period while, majority (80.00%) partially adopted during flood period. About 61.67 percent fully adopted separating pregnant animals from other animals in normal period and only 8.33 percent followed it during flood period. Farmers could not take proper care of dairy animals due to shortage of feed and fodder during flood period. Even though farmers had knowledge about feeding concentrates and separating pregnant animals, they had not followed proper management practices. Nutrient management and care, especially for the pregnant animals is much vital. The disturbance due the natural calamity not only affects milk yield, but also health of the animals in longrun. The findings are in line with Senthikumar and Murugesan (2020) [10] in their study at Tamil Nadu.

### Feeding management

Study observed that majority (70.00%) followed both stall feeding and open grazing feeding system during normal period whereas, 86.67 percent of them followed stall feeding and none of them followed grazing during flood period. During flood, farmers are temporarily shifted to safer place, support was given for survival. Even during flood period, the grazing land were also flooded by water. Hence, due to lack of availability of grazing fields during flood farmers practiced stall feeding system for feeding the dairy animals.

During normal period, 46.67 percent of the dairy farmers adopted feeding extra concentrate mixture less than recommended quantity while 43.33 percent fully adopted as recommended. During flood period 43.33 percent partially adopted followed by, 10.00 percent followed recommended quantity. About 71.67 percent fully adopted use of silage or hay technology during normal period. While, only 23.33 percent followed recommended quantity during flood period. More than half (51.66%) of the farmers practiced feeding crop residues during normal period, while, 63.33 percent followed it during flood period. The reason for this is most of the farmers lost their stored reserve of feed and fodder resources due to flood, which lead to shortage or non-availability of feeds. Due to shortage of extra concentrates, farmers adopted feeding available crop residues to the dairy animals.

Further it was found that, during normal period, 30.00 percent partially adopted feeding fodder trees and vegetables leaves and more than half (60.00%) fully adopted during flood period. Around 63.33 percent partially adopted use of unconventional feed resources such as subabul in normal period whereas, 43.33 percent partially adopted them during flood period. Use of complete feeds was partially adopted by 36.67 percent during normal period while, 45.00 percent partially adopted during flood period. Majority (96.67%) of the farmers had fully adopted providing clean drinking water during normal period but only 40.00 percent fully adopted it during flood period. Since there was shortage of feed and fodder, farmers bought fodder trees and leaves from nearby hilly area and fed to the animals. Most of farmers couldn't practice providing clean drinking water due to contamination of water resources due to flood. Similar findings were found in study conducted by Singh and Gupta (2015) [11] and Manhas (2015) [7].

With respect to nutrient management, 33.33 percent of the dairy farmers followed as recommended for normal cows in normal period but only 11.67 percent followed fully during flood period. Similarly, for pregnant / lactating animals 30.00 percent fully adopted as per recommendation during normal period whereas, none of them fully adopted and 30.00 percent partially adopted during flood period. The probable reason here is farmers couldn't meet the nutrient

requirements of the dairy animals as per recommendation due to lack of access and insufficient supply of nutrients during crisis period. Sudden shift in the place during flood also affects transport facility. It restricts their movement. Hence they were not able to provide nutrient supplements to their animals. The results coincide with Kirar *et al.* (2019)<sup>[5]</sup>.

**Table 2:** Health care and vaccination management practices adopted by dairy farmers during normal and flood period (n=60)

| 1) Health care and vaccination |  |                |                   |             |               |                   |             |
|--------------------------------|--|----------------|-------------------|-------------|---------------|-------------------|-------------|
|                                |  | Adoption level |                   |             |               |                   |             |
|                                |  | Normal period  |                   |             | Flood period  |                   |             |
|                                |  | Fully adopted  | Partially adopted | Not adopted | Fully adopted | Partially adopted | Not adopted |
|                                |  | Freq. (%)      | Freq. (%)         | Freq. (%)   | Freq. (%)     | Freq. (%)         | Freq. (%)   |
| A.                             | <b>Practices</b>                                       |                |                   |             |               |                   |             |
|                                | i) Regular deworming                                   | 60 (100.00)    | 0 (0.00)          | 0 (0.00)    | 52 (86.67)    | 0 (0.00)          | 8 (13.33)   |
|                                | ii) Stock emergency common medicine for flood period   | 6 (10.00)      | 0 (0.00)          | 54 (90.00)  | 8 (13.33)     | 0 (0.00)          | 52 (86.67)  |
|                                | iii) Sanitization of animal shed by insecticidal spray | 34 (56.66)     | 23 (38.33)        | 3 (5.00)    | 16 (26.67)    | 26 (43.33)        | 18 (30.00)  |
|                                | iv) Carcass disposal by burning or burial              | 11 (18.33)     | 0 (0.00)          | 49 (81.67)  | 19 (31.67)    | 0 (0.00)          | 41 (68.33)  |
|                                | v) Follow vaccination schedule                         | 60 (100.00)    | 0 (0.00)          | 0 (0.00)    | 38 (63.33)    | 0 (0.00)          | 22 (36.67)  |
|                                | vi) Culling of animals                                 | 12 (20.00)     | 0 (0.00)          | 48 (80.00)  | 10 (16.67)    | 0 (0.00)          | 50 (83.33)  |

**Table 3:** Care and management practices adopted by dairy farmers during normal and flood period (n=60)

| 1) Care and management of calves           |   |                |                   |             |               |                   |             |
|--|---|----------------|-------------------|-------------|---------------|-------------------|-------------|
|  |   | Adoption level |                   |             |               |                   |             |
|  |   | Normal period  |                   |             | Flood period  |                   |             |
|  |   | Fully adopted  | Partially adopted | Not adopted | Fully adopted | Partially adopted | Not adopted |
|  |   | Freq. (%)      | Freq. (%)         | Freq. (%)   | Freq. (%)     | Freq. (%)         | Freq. (%)   |
| A.   | <b>Practices</b>  |                |                   |             |               |                   |             |
|  | i) Feeding of colostrum within 4 hrs. of birth  | 60 (100.00)    | 0 (0.00)          | 0 (0.00)    | 59 (98.33)    | 0 (0.00)          | 1 (1.67)    |
|  | ii) Vaccination should be done from 3 months old animal   | 12 (20.00)     | 48 (80.00)        | 0 (0.00)    | 17 (28.33)    | 19 (31.67)        | 24 (40.00)  |
| 2) Care and management of pregnant animals |   |                |                   |             |               |                   |             |
|  | <b>Practices</b>  |                |                   |             |               |                   |             |
| A.   | i) De-worming should be done between the 4 <sup>th</sup> month to 7 <sup>th</sup> months of pregnancy             | 20 (33.33)     | 38 (63.33)        | 2 (3.33)    | 15 (25.00)    | 12 (20.00)        | 33 (55.00)  |
|  | ii) Provide 1 kg of concentrates for every 2.5 kg milk production +Pregnancy allowance of 1 kg ration in addition | 2 (3.33)       | 24 (40.00)        | 34 (56.67)  | 0 (0.00)      | 48 (80.00)        | 12 (20.00)  |
|  | iii) Separate pregnant animals from other animals   | 37 (61.67)     | 0 (0.00)          | 23 (38.33)  | 5 (8.33)      | 0 (0.00)          | 55 (91.67)  |

**Table 4:** Feeding management practices by dairy farmers during normal and flood period (n=60)

| 1) Feeding Management                         |                |                   |             |               |                   |             |
|---|----------------|-------------------|-------------|---------------|-------------------|-------------|
| Practices                                     | Adoption level |                   |             |               |                   |             |
|   | Normal period  |                   |             | Flood period  |                   |             |
|   | Fully adopted  | Partially adopted | Not adopted | Fully adopted | Partially adopted | Not adopted |
|   | Freq. (%)      | Freq. (%)         | Freq. (%)   | Freq. (%)     | Freq. (%)         | Freq. (%)   |
| <b>A. Feeding system</b>                      |                |                   |             |               |                   |             |
| i) Stall feeding                              | 14 (23.33)     | 0 (0.00)          | 46 (76.67)  | 52 (86.67)    | 0 (0.00)          | 8 (13.33)   |
| ii) Grazing                                   | 4 (6.67)       | 0 (0.00)          | 56 (93.33)  | 0 (0.00)      | 0 (0.00)          | 60 (100.00) |
| iii) Both                                     | 42 (70.00)     | 0 (0.00)          | 18 (30.00)  | 8 (13.33)     | 0 (0.00)          | 52 (86.67)  |
| <b>A. Feeding practices</b>                   |                |                   |             |               |                   |             |
| i) Feeding extra concentrate mixture          | 26 (43.33)     | 28 (46.67)        | 6 (10.00)   | 6 (10.00)     | 26 (43.33)        | 28 (46.67)  |
| ii) Use of silage or hay technology           | 43 (71.67)     | 0 (0.00)          | 17 (28.33)  | 14 (23.33)    | 0 (0.00)          | 46 (76.67)  |
| iii) Feeding crop residues                    | 31 (51.66)     | 27 (45.00)        | 2 (3.33)    | 38 (63.33)    | 22 (36.67)        | 0 (0.00)    |
| iv) Feeding fodder trees and vegetable leaves | 3 (5.00)       | 18 (30.00)        | 39 (65.00)  | 36 (60.00)    | 20 (33.33)        | 4 (6.67)    |
| v) Use of unconventional feed resources       | 3 (5.00)       | 38 (63.33)        | 19 (31.67)  | 23 (38.33)    | 26 (43.33)        | 11 (18.33)  |
| vi) Complete feeds                            | 20 (33.33)     | 22 (36.67)        | 18 (30.00)  | 6 (10.00)     | 27 (45.00)        | 27 (45.00)  |
| vii) Providing clean water for drinking       | 58 (96.67)     | 0 (0.00)          | 2 (3.33)    | 24 (40.00)    | 0 (0.00)          | 1 (56.67)   |
| <b>2) Nutrient management</b>                 |                |                   |             |               |                   |             |
| <b>A. Nutrient requirement</b>                |                |                   |             |               |                   |             |
| Concentrates:                                 |                |                   |             |               |                   |             |
| a. For Normal cows                            | 20 (33.33)     | 39 (65.00)        | 1 (1.67)    | 7 (11.67)     | 9 (15.00)         | 44 (73.33)  |
| b. For pregnant /lactating cows               | 18 (30.00)     | 20 (33.33)        | 22 (36.67)  | 0 (0.00)      | 18 (30.00)        | 42 (70.00)  |

**Conclusion**

In conclusion, the study highlights significant disparities in health and vaccination practices, care and management strategies, as well as feeding management among dairy farmers during normal periods compared to flood periods. Despite government efforts to provide veterinary services during floods, farmers still face challenges accessing these services, leading to health issues such as respiratory infections among animals. To mitigate these challenges, proactive measures such as stocking emergency medicines, implementing sanitary measures, and culling non-productive animals are essential. The findings underscore the importance of preparedness and proper management practices, particularly in times of crisis. Moreover, the study emphasizes the vital role of nutrient management in ensuring the health and productivity of dairy animals, especially during challenging situations like floods. Addressing these issues requires collaborative efforts between farmers, government agencies, and other stakeholders to safeguard the well-being of dairy animals and ensure the sustainability of the dairy industry.

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