

International Journal of Agriculture Extension and Social Development

Volume 9; SP-Issue 1; January 2026; Page No. 189-192

Received: 25-10-2025

Accepted: 29-11-2025

Indexed Journal

Peer Reviewed Journal

Coping strategies pertaining to marketing and insurance adopted for dairy animals during the 2018 floods in Kerala, India

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DOI: <https://doi.org/10.33545/26180723.2026.v9.i1Sc.2970>

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Abstract

This study focuses on the marketing and insurance-related coping strategies adopted by dairy farmers in the three most affected districts of Kerala—Thrissur, Idukki, and Ernakulam—following the catastrophic 2018 monsoonal floods. The research collected data from a sample of 180 dairy farmers, assessing the adoption level of eight coping mechanisms using a three-point scale to derive index scores and subsequent rankings. The results indicate a high reliance on institutional support and cooperative structures. Specifically, Facilitation of marketing of milk during the disaster and Knowing the procedure for applying government compensation were consistently ranked as the top two most important and widely adopted strategies across all regions, demonstrating the critical role of government and cooperative interventions. Insurance of the animals for death and physical disabilities also showed high adoption, being consistently ranked third. Conversely, preparatory and proactive financial measures such as Facilitation of Farmer's producers organisation and Value addition of milk were the least utilised strategies.

Keywords: Floods, dairy farming, marketing and insurance coping strategies

Introduction

In August 2018, the Indian state of Kerala experienced one of the most devastating monsoon floods in its recorded history. Intense and prolonged rainfall from June through 19 August brought an extraordinary 2346.6 mm of rain, approximately 42 per cent above the long-term average for the period, with 758.6 mm falling in August alone, nearly 164% above normal. (Kerala State Disaster Management Authority, 2019) ^[3]. This sudden deluge triggered widespread flooding across the state, affecting 13 of Kerala's 14 districts and forcing the evacuation of millions of people to more than 12,000 relief camps. The overall human toll included hundreds of fatalities, while infrastructure, homes, and agricultural land suffered extensive losses. The flood's impact extended deeply into the livestock sector, where thousands of dairy animals died and many livelihoods were disrupted due to destroyed cattle sheds, loss of fodder, and interrupted supply chains. Accompanying the hydrological catastrophe were more than 300 reported landslides in ten districts, aggravating the state's socioeconomic vulnerabilities and environmental degradation.

The dairy sector, an important component of Kerala's rural economy, was particularly affected. Milk procurement and production plummeted due to reductions in herd strength and constrained access to feed and veterinary care. Cooperatives faced logistical challenges in milk collection, while dairy farmers struggled to maintain their traditional marketing channels amidst damaged infrastructure and market disruptions. Post-flood interventions by government

authorities, cooperatives, and relief agencies sought to restore dairy production capacity and offer financial relief (Government of Kerala, 2020) ^[2].

One of the key strategies adopted in the aftermath of the floods involved strengthening cooperative support structures to ensure milk marketing and price stability for dairy farmers. The Kerala Co-operative Milk Marketing Federation (Milma) and state government collaborated to channel financial and operational support to flood-affected producers, aiming to sustain milk procurement volume and stabilise market access for farmers. This included compensatory funds, marketing investments, and assurances of continued milk purchase even when production was temporarily reduced. Such support helped prevent a complete collapse of farmer income during the recovery period, enabling many to remain engaged in dairy production despite severe disruptions.

Regional cooperatives, particularly in hard-hit districts like Ernakulam, Thrissur, and Idukki, also initiated local marketing initiatives and procurement incentives (such as additional price per litre) to encourage farmers to continue supplying milk. These measures were intended to cushion income losses and rebuild confidence in dairy markets after the flood (Prabhakar *et al.*, 2020) ^[8].

Dairy farmers who lost animals received direct compensation payments from government disaster relief funds. In many cases, state authorities provided fixed amounts to farmers who lost cattle, with additional support available through special rehabilitation funds earmarked for the livestock sector. This compensation served both as a

form of insurance substitute and as a means to facilitate the repopulation of herds, crucial for resuming milk production and sales. Skees (1999) ^[11] reported that subsidised insurance programmes for dairy cattle favour those with highest risk and those in the highest risk regions.

Although not strictly insurance, the distribution of feed and fodder—often free of cost or at subsidised rates—was critical in maintaining dairy herd health and production capacity. State agencies, cooperatives, and allied organisations distributed thousands of bags of cattle feed, supplements, and veterinary medicines to affected farmers. This logistical support reduced the immediate economic strain on farmers and helped mitigate production losses, indirectly supporting marketing efforts by enabling animals to continue producing milk.

In recognition of the severe losses to livestock, the Kerala government utilised livestock insurance schemes and disaster relief funds to settle claims and provide additional payouts to animal owners. While formal insurance penetration in the dairy sector was limited at the time, the state's disaster relief framework included mechanisms for compensation to livestock owners that fulfilled some functions of insurance by monetarily offsetting losses. (Bajwa and Rathore, 2025) ^[1] Payments from these schemes helped affected households recover financially and signalled the importance of formal risk management tools in agricultural communities.

Beyond compensation payments, authorities identified the need for improved disaster-linked financial protection for dairy farmers in future calamities, including awareness programs on animal insurance and incentives for higher uptake of risk-mitigating financial products. (Wasike, *et al*, 2025) ^[12].

Materials and Methods

United Nations post-disaster evaluations identified seven districts in Kerala—Alappuzha, Ernakulam, Idukki, Kottayam, Pathanamthitta, Thrissur and Wayanad—as the most severely affected by the floods of 2018 (United Nations, 2018) [1]. For the present study, Thrissur, Ernakulam and Idukki districts were deliberately selected owing to their substantial reductions in milk procurement following the floods, amounting to 33.58%, 29.58% and 16.92%, respectively. Although Pathanamthitta district recorded a higher proportional decline in milk procurement, this reduction occurred from a relatively low base level of production and therefore did not adequately reflect the scale of disruption experienced in high-density dairy regions (Patil *et al.*, 2022) ^[7]. The selected districts thus offered a more representative picture of the regional dairy crisis, given their higher livestock population, stronger cooperative

presence and repeated exposure to flood hazards.

Within each selected district, four panchayats were chosen based on the intensity of flood damage. Using secondary information obtained from the Department of Dairy Development and the Kerala State Animal Husbandry Department, a list of flood-affected dairy farmers was prepared for each panchayat. From these lists, fifteen farmers were randomly selected per panchayat. Consequently, a total of 180 dairy farmers drawn from 12 panchayats constituted the final sample for the study.

In this research, coping strategies are understood as the behavioural and cognitive responses adopted by dairy farmers to reduce or manage stress caused by flood-related disruptions to livestock and livelihoods, in line with the transactional model of stress and coping proposed by Lazarus and Folkman (1984) ^[5]. Accordingly, coping mechanisms were categorised into problem-focused strategies, which directly address the source of stress (such as adaptive management practices), and emotion-focused strategies, which aim to regulate psychological distress through social or cognitive adjustments.

Measurement of Feeding-Related Coping Strategies

The present investigation concentrated specifically on coping strategies pertaining to marketing and insurance. A comprehensive list of potential feeding coping strategies was developed through an extensive review of relevant literature and discussions with experts from veterinary and dairy extension institutions in Kerala. The extent of adoption of each strategy by farmers was measured using a three-point continuum: adopted continuously (AC), adopted but later discontinued (AD), and never adopted (NA). These responses were assigned scores of 2, 1 and 0, respectively. In addition to making it easier to calculate adoption indices and rankings for comparison study across the chosen districts, this scoring methodology made it possible to evaluate the dynamic character of coping behaviour during recurrent flood situations. (Singh *et al.*, 2017) ^[10].

Results

The result of Table 1 revealed that in Thrissur district, facilitation of marketing of milk during the disaster was followed by 96.67 per cent of respondents followed by availing government compensation (91.67%), insurance of animals (80%), lending the animals to friends and relatives who live high ground (61.67%), mortgaging the animals for money (25%), value addition of milk and other produces for better marketing (21.67%), facilitation of farmer's producers organisation (16.67%) and selling of diseased and unproductive animals before monsoon (13.33%).

Table 1: Marketing and insurance coping mechanism followed by respondents (Percentage)

Sl. No.	Marketing and Insurance	Thrissur				Idukki				Ernakulam			
		AC	AD	NA	Total	AC	AD	NA	Total	AC	AD	NA	Total
1	Sale of the diseased and unproductive animals before monsoon	13.33	16.67	70	100	25	15	60	100	11.7	15	73.3	100
2	Mortgaging the animals for money	25	3.33	71.67	100	11.7	5	83.33	100	12	5	83.3	100
3	Lending the animals to friends and relatives who live high ground	61.67	8.33	30	100	30	6.67	63.33	100	46.7	6.67	46.7	100
4	Value addition of milk and other produces for better marketing	21.67	8.33	70	100	13.3	10	76.67	100	28.3	10	61.7	100
5	Know the procedure for applying government compensation	91.67	0	8.33	100	95	0	5	100	98.3	0	1.67	100
6	Insurance of the animals for death and physical disabilities	80	0	20	100	90	0	10	100	75	0	25	100
7	Facilitation of marketing of milk during the disaster	96.67	3.33	0	100	91	3.33	5	100	88.3	3.33	8.33	100
8	Facilitation of Farmer's producers organisation	16.67	1.67	81.67	100	40	3.33	56.67	100	30	3.33	66.7	100
AC: Adoption Continued; AD: Adoption Discontinued; NA: Never Adopted													

In Idukki district, availing government compensation was followed by 95 per cent of the respondents followed by facilitation of marketing of milk during the disaster (91%), insurance of animals (90%), facilitation of farmer's producers organisation (40%), lending the animals to friends and relatives who live high ground (30%), selling of diseased and unproductive animals before monsoon (25%), value addition of milk and other produces for better marketing (13.33%) and mortgaging the animals for money (11.7%).

In Ernakulam district, availing government compensation was followed by 98.3 per cent of the respondents followed by facilitation of marketing of milk during the disaster (88.3%), insurance of animals (75%), lending the animals to friends and relatives who live high ground (46.7%), facilitation of farmer's producers organisation (40%), value addition of milk and other produces for better marketing (28.3%), mortgaging the animals for money (12%) and selling of diseased and unproductive animals before monsoon (11.7%).

Table 2: Index score and ranking of marketing and insurance coping mechanisms followed by respondents

Sl. No.	Marketing and Insurance	Thrissur	Idukki	Ernakulam
1	Sale of the diseased and unproductive animals before monsoon	0.22(vii)	0.33(v)	0.19(vii)
2	Mortgaging the animals for money	0.27(v)	0.14(viii)	0.15(viii)
3	Lending the animals to friends and relatives who live high ground	0.66(iv)	0.33(v)	0.50(iv)
4	Value addition of milk and other produces for better marketing	0.26(vi)	0.18(vii)	0.33(v)
5	Know the procedure for applying government compensation	0.92(ii)	0.95(i)	0.98(i)
6	Insurance of the animals for death and physical disabilities	0.80(iii)	0.90(iii)	0.75(iii)
7	Facilitation of marketing of milk during the disaster	0.98(i)	0.93(ii)	0.90(ii)
8	Facilitation of farmer's producers organisation	0.18(viii)	0.42(iv)	0.32(vi)

Values in parenthesis indicates the order of merit of preferences by the respondents column wise

The result of Table 2 revealed that in Thrissur district, facilitation of marketing of milk during the disaster with an index score of 0.98 ranked first among marketing and insurance coping mechanism. This was followed by availing government compensation (0.92), insurance of animals (0.80), lending the animals to friends and relatives who live high ground (0.66), mortgaging the animals for money (0.27), value addition of milk and other produces for better marketing (0.26), selling of diseased and unproductive animals before monsoon (0.22) and facilitation of farmer's producers organisation (0.18).

In Idukki district, availing government compensation with an index score of 0.95 ranked first among marketing and insurance coping mechanism. This was followed by facilitation of marketing of milk during the disaster (0.93), insurance of animals (0.90), facilitation of farmer's producers organisation (0.42), lending the animals to friends and relatives who live high ground (0.33), selling of diseased and unproductive animals before monsoon (0.33), value addition of milk and other produces for better marketing (0.18) and mortgaging the animals for money (0.14).

In Ernakulam district, availing government compensation with an index score of 0.98 ranked first among marketing and insurance coping mechanism, followed by facilitation of marketing of milk during the disaster (0.90), insurance of animals (0.75), lending the animals to friends and relatives who live high ground (0.50), value addition of milk and other produces for better marketing (0.33), facilitation of farmer's producers organisation (0.32), selling of diseased and unproductive animals before monsoon (0.19) and mortgaging the animals for money (0.15).

Discussion

The results of the study pointed almost all the dairy farmers in all the three districts were aware of the procedure for applying government compensation. Facilitation of marketing of milk amid the flood disaster was adopted by all of the farmers in all three districts in cohesion with dairy

department officials. Insurance of the dairy animals was followed by four fifths of dairy farmers. (Sanglikar, *et al.*, 2024) ^[9]. The practice of lending the animals to friends and relatives who live high ground was adopted by two third of flood affected dairy farmers in Thrissur and Ernakulam. But this practice had few takers in Idukki district with only one third of farmers adopting it.

The following coping strategies of selling of the animals well ahead of the occurrence of flood, mortgaging the animals with local land lord for money, value addition of milk and other produces for better marketing and facilitation of farmer's producers organisation has only two tenth of dairy farmers following in all the districts. In all the districts farmers tend to sell only diseased and unproductive animals and do not sell the productive animals.

The outcomes of the study was in contrary with the findings of Mishra *et al.* (2017) ^[6] who attributed that in Odisha insurance of livestock was being done by only one twentieth of dairy farmers and Khandker (2007) ^[4] who reported that three fourth of the households in Bangladesh sold their land, livestock, or belongings to reduce the losses due to the flood. The high level of adoption of insurance of dairy animals in Kerala might be attributed to the schemes such as Gau Suraksha where about half of insurance premium was paid by the government.

Conclusion

The study concludes that the dairy farming community in flood-affected Kerala demonstrated a strong inclination toward immediately accessible, post-disaster financial and logistical support. The near-universal awareness of and participation in availing government compensation, alongside the high adoption of facilitated milk marketing, were the most effective coping strategies used to sustain livelihoods. The high rate of animal insurance uptake, followed by four-fifths of the farmers, is a notable finding, contrasting with lower rates seen in other regional disaster studies, a success attributed partially to government subsidies like the Gau Suraksha scheme. However, the

significantly lower adoption of market-linked resilience strategies, such as value addition and participation in farmer producer organizations, suggests a substantial area for intervention. To build genuine long-term resilience, future policy and extension efforts should concentrate on increasing farmer education and incentives for financial planning, risk-mitigation tools, and fostering collective marketing organizations well ahead of disaster occurrences.

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