

PROSPECTS OF CATTLE INSURANCE IN SELECT DISTRICTS OF KARNATAKA

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ABSTRACT

The livestock insurance mechanism is recognized as a highly effective risk mitigation strategy, crucial for safeguarding farmers against uncertainties and potential losses. Despite its advantages, the uptake of cattle insurance among farmers remains notably low. To address this issue, a detailed investigation into the status of cattle insurance and the challenges faced by farmers and other stakeholders was conducted in Karnataka, India. The study involved a sample of 240 dairy farmers, with 80 households each from the Kolar, Shivamogga, and Dharwad districts. Data were collected through personal interviews and analyzed using tabular analysis, the Z-test statistic, the Mann-Whitney's U test, and the Henry Garrett Ranking Technique. The findings revealed that only 41.25% of the sampled households had insured their cattle. An inter-district comparison indicated that Kolar district had the highest insurance uptake at 66.25%, followed by Shivamogga at 40%, and Dharwad at 17.50%. The analysis further demonstrated that insured farmers typically had a lower average age, more years of schooling, and smaller family sizes compared to their non-insured counterparts. Additionally, insured animals were generally older and belonged to higher lactation orders compared to non-insured animals. Furthermore, the market value of insured animals was significantly higher than that of non-insured ones. The study identified several key constraints contributing to the low adoption of cattle insurance. These included a lack of awareness regarding insurance policies and regulations, limited coverage beyond mortality, discrepancies between insured and actual market values, and complex procedural requirements. Insurance agencies also faced challenges such as difficulties in arranging necessary documentation for insurance claims and ensuring compliance with insurance regulations by dairy farmers. In summary, while cattle insurance provides substantial benefits, its uptake is impeded by several factors. Addressing these challenges through improved awareness and streamlined processes could enhance the adoption rates and effectiveness of cattle insurance in mitigating risks for farmers.

Keywords: Adoption status, cattle insurance, constraints, stakeholders, univariate test

Livestock is considered one of the most critical productive assets in rural India, yet it is highly vulnerable to various risks and uncertainties. Consequently, an effective insurance mechanism is crucial for the farming community to manage these risks. Policymakers face significant challenges in extending comprehensive risk coverage to livestock assets, particularly those owned by resource-poor farmers. Despite the clear benefits of insurance, adoption rates remain low, with only 7 percent of cattle being insured (Sharma *et al.*, 2010). Typically, without compulsion from lending institutions, farmers are reluctant to engage with livestock insurance products, reflecting a varied and often skeptical response towards their adoption.

Raju and Chand (2008) examined the challenges

and prospects of agricultural insurance in India, reporting that by the fiscal year 2004-05, approximately 32.18 million households were insured, covering just 6.58 percent of the livestock population. Despite this coverage, the implementation of livestock insurance has been largely ineffective, with slow progress and unsatisfactory results for farmers. The procedures for claim verification and settlement have been a persistent source of frustration, necessitating a comprehensive review. Sharma *et al.* (2010) observed that 90 percent of livestock insurance policies were compulsory and credit-linked, distributed through partner-agent models, with fewer than 10 percent offered as voluntary products through direct sales. Although many schemes offered a 50 percent subsidy on premiums, they faced significant challenges, including inadequate monitoring of subsidies, inefficient livestock delivery processes, and fraud. In a case study conducted by Sharma and Shukla (2010) in Vizianagaram, Andhra Pradesh, it was

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Date of receipt: 17.08.2023, Date of acceptance: 20.03.2024

found that livestock insurance products were generally costly and reached only a minimal segment of the poor, predominantly when linked to government schemes. Despite 30 years of governmental efforts, only 7 percent of cattle in India were insured. Major issues included the prevalence of moral hazard and the fact that over 25 percent of claims were fraudulent.

Banerjee and Bhattacharya (2011) reported that between 2006-07 and 2009-10, more than 2 million animals were insured under the centrally sponsored Livestock Insurance scheme, which spanned 300 districts across various states. Varadan and Kumar (2012) compared the socio-economic characteristics of insured and non-insured rice farmers in Tamil Nadu, finding no significant differences in average age, family size, education, farming experience, or income from off-farm occupations. Khan *et al.* (2014) assessed the socio-economic profiles of insured and non-insured farmers in Gorakhpur district, Uttar Pradesh, noting that insured farmers tended to be younger, with slightly higher average land holdings, educational levels, dairying experience, and farm sizes compared to their non-insured counterparts. Chand *et al.* (2016) investigated the status and coverage of livestock insurance in Haryana and Rajasthan, finding that 34.0 percent and 28.6 percent of households insured 8.4 percent and 7.7 percent of their animals, respectively.

Shenoy and Raju's 1990 report on cattle insurance under the Integrated Rural Development Programme (IRDP) highlighted significant challenges in claim settlement procedures, which adversely affected beneficiaries. The complex requirements for claim processing included claim forms, postmortem certificates, ear tags, photographs, *panchnama* (a legal document recording the circumstances of an incident), and occasionally a veterinary doctor's treatment certificate. Prasad and Rao (1992) documented substantial delays in claim settlements across different states in India. In Andhra Pradesh, the average claim settlement time was 146 days, whereas in Tamil Nadu it was 82 days. Common causes of death claims included acute tympani, epidemics, digestive disorders, natural calamities, and accidents. Delays were often due to the late submission of death certificates and missing ear tags. Mogos and Lucia's 2009 study on Namibian cattle farmers revealed that none of the farmers insured their livestock. Among commercial farmers, 64.3% and among communal farmers, 82.8% did not perceive insurance as valuable. Additionally, 26.27% of commercial farmers and 17.2% of communal farmers found insurance premiums prohibitively expensive. This study emphasized the need for enhanced collaboration between government bodies, civil society organizations, and the private sector to improve risk management

strategies. Singh (2015) employed the Garrett ranking technique to identify key constraints faced by dairy farmers in adopting livestock insurance. The major issues included inadequate insurance coverage at market prices, cumbersome procedures, dissatisfaction with the indemnity period, insufficient claim payments, unfamiliarity with insurance regulations, a laborious claims process, and delays in interactions with insurance agents and veterinarians.

There is a limited body of research on livestock risk management strategies and the profiles of farmers who adopt insurance in India. Given the significant benefits of livestock insurance, particularly for small and marginal farmers facing potential losses, there is a pressing need for a critical analysis of the adoption status and constraints encountered by both farmers and stakeholders regarding cattle insurance. To address this gap in the literature and explore these issues, the proposed study was conducted in selected districts of Karnataka, a state recognized as one of the leading dairy producers in Southern India. The study aimed to provide a detailed examination of the constraints associated with cattle insurance. Karnataka's progressive dairy sector and the study area's relevance provided an ideal context for this investigation, contributing valuable insights to the sparse research on this crucial topic.

METHODOLOGY

Karnataka state is categorized into three distinct regions based on topography, cropping patterns, and animal production: the Northern Plain Region, the Malnad & Coastal Region, and the Southern Plain Region. The Northern region is primarily dominated by buffaloes, the Southern region by crossbred cattle, and the Malnad & Coastal region by indigenous cattle. For this study, districts were selected to represent each of these regions: Kolar from the Southern Plain Region, Shivamogga from the Malnad & Coastal Region, and Dharwad from the Northern Plain Region. Kolar district, notable for having the highest proportion of crossbred cattle population (1.73 lakhs) and leading in livestock insurance uptake, was chosen due to its relevance and significance. While, Shivamogga and Dharwad districts were selected to provide a comparative perspective. The study aimed to fill a gap in empirical research within these districts, known for their progressive dairy farming practices and significant coverage under the cattle insurance scheme. Eight villages were randomly selected from each district, and within each village, ten dairy farmers were randomly chosen, resulting in a total sample of 240 dairy farming households, with 80 farmers from each district. The sampled dairy farmers were further categorized into insured and non-insured groups based on their participation in cattle insurance.

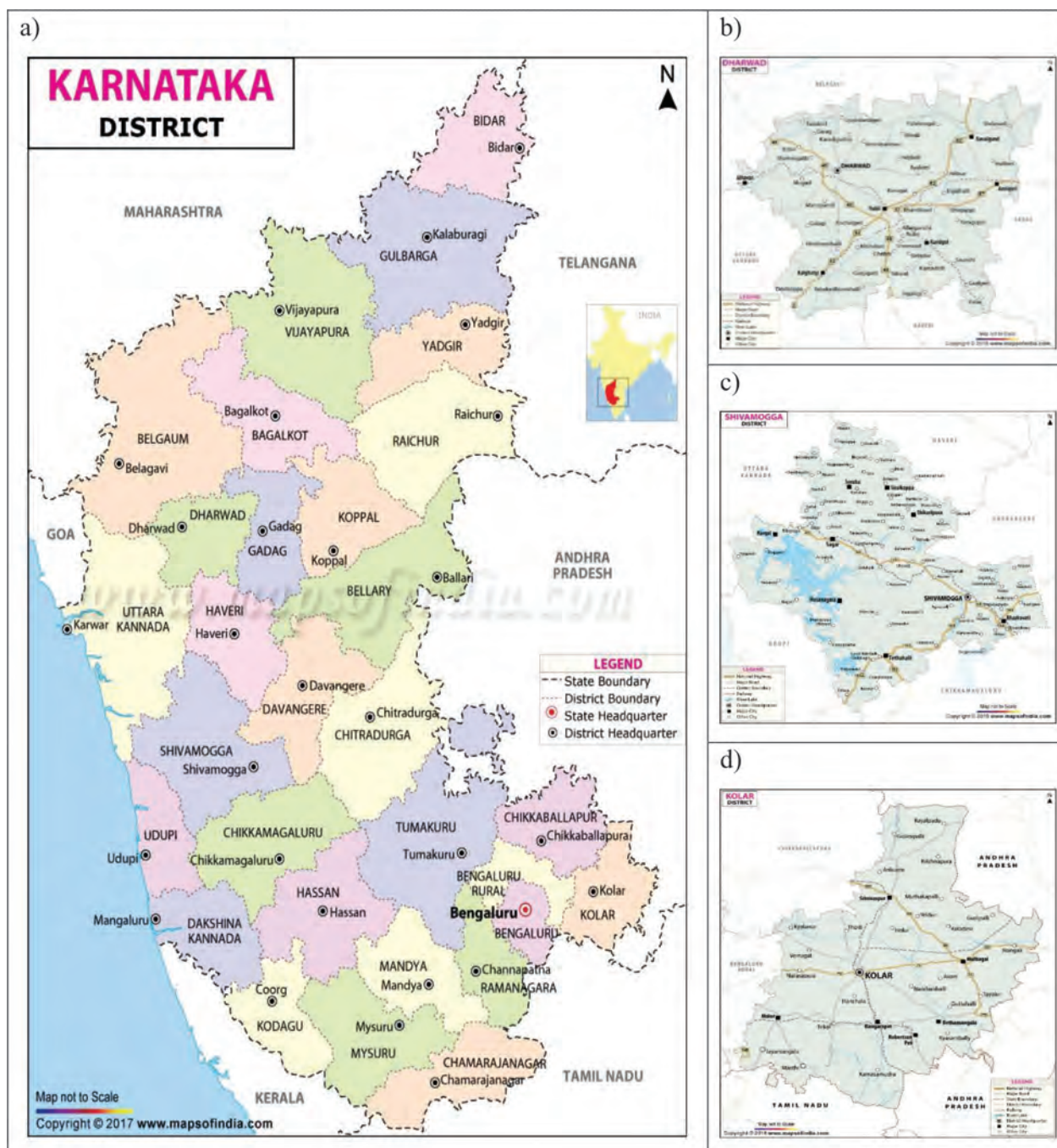


Fig. 1. Map showing the study areas a) Karnataka State b) Dharwad c) Shivamogga and d) Kolar district

The study aimed to analyze both primary and secondary data using a range of analytical tools. The methodologies employed to achieve this objective are briefly outlined in the following subsections.

Univariate Analysis

Univariate analysis, the most basic form of data analysis, focuses on a single variable. Its primary purpose is to describe the data and identify underlying patterns. In this study, univariate analysis was conducted

using Z-test statistics and the Mann-Whitney U-test.

Z-test statistics

The Z-test statistic was utilized to assess significant differences in the mean values of various socio-economic variables between farmers who insured their cattle and those who did not. Additionally, the Z-test was applied to compare differences in animal characteristics, such as age, milk yield, and market value, between the insured and non-insured categories.

The Z-test is appropriate for large sample sizes when the variance is known and follows a normal distribution.

The general formula for the Z-test is expressed as:

$$Z = \frac{\mu_1 - \mu_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}} \dots\dots (2)$$

where,

μ_1 & μ_2 = Mean of the insured and non-insured sample categories

σ_1 & σ_2 = Standard deviation of the insured and non-insured sample categories

n_1 & n_2 = Sample size of the insured and non-insured categories

Mann-Whitney U-test

The Mann-Whitney U test is a non-parametric alternative to the independent samples t-test. It is used to compare two independent samples to determine whether their distributions are significantly different, particularly when the data are ordinal or continuous and do not meet the assumptions required for the t-test, such as normality. The Mann-Whitney U test assesses whether the distributions of the two groups differ, rather than comparing means directly. It is particularly useful when the data are not normally distributed.

The general formula for the Mann-Whitney U test is:

$$U = n_1 n_2 + \frac{n_2(n_2+1)}{2} - \sum_{i=n_1+1}^{n_2} R_i \dots\dots(3)$$

where,

U = Mann-Whitney U test

n_1 & n_2 = Sample size of insured and non-insured categories

R_i = Rank of the sample size

Henry Garrett Ranking Technique: Garrett's ranking technique was employed to rank the constraints faced by farmers and other stakeholders in adopting cattle insurance. In this method, respondents were asked to rank the constraints according to their significance. These ranks were then converted into percentile positions to facilitate a comparative analysis of the constraints.

The percentile position of each rank is calculated using the following formula, as outlined by Garrett and Woodworth (1971):

$$\text{Percent position} = 100 (R_{ij} - 0.5) / N_j$$

where,

R_{ij} = Rank given for the i^{th} constraint by j^{th} individual farmer and various stakeholders.

N_j = Number of constraints ranked by j^{th} individual farmer and various stakeholders.

The percentage rank for each constraint was calculated for all farmers to determine the overall (average) percentage position. This was done by dividing the sum of the percentage positions for the total sample by the number of respondents. The average percentage position was then converted into scores using the transmutation table provided by Garrett. The final ranks were assigned by arranging these scores in descending order. This procedure was also applied to other stakeholders.

RESULTS AND DISCUSSION

This paper provides an analysis of several key aspects related to cattle insurance in the study area. It details the demographic profile of the region, the socio-economic background of the sample households, and the types of dairy animals being insured. Additionally, it examines the characteristics of households that have insured their cattle and identifies the constraints faced by both dairy farmers and insurance agencies. The study postulates that the low adoption of cattle insurance is primarily due to a range of constraints and practical difficulties encountered by insurance agencies. These challenges contribute to the overall limited uptake of insurance among farmers.

Status of bovine population in study area

Table 1 presents the distribution of the bovine population in the study area. According to the 20th Livestock Census (Anonymous 2019), the state has a total bovine population of 12.98 million, comprising 6.60 million indigenous cattle (50.85%), 2.91 million crossbred cattle (22.43%), and 3.47 million buffaloes (26.72%). The total livestock population in the state is 27.70 million. In Kolar district, crossbred cattle constitute 63.15% of the total bovine population, the highest proportion among the districts, followed by indigenous cattle at 20.16% and buffaloes at 16.69%. In Shivamogga district, indigenous cattle make up 63.56% of the bovine population, with buffaloes comprising 20.82% and crossbred cattle accounting for 15.61%. Dharwad district has a bovine population with 54.83% indigenous cattle, 29.09% buffaloes, and 16.06% crossbred cattle.

Table 1 illustrates the total bovine milk production in selected districts of Karnataka. The state ranks 11th in the country for total milk production, contributing 5.659 million tonnes. Of this, crossbred cows contribute the largest share at 44.44%, followed by buffaloes at 30.75% and indigenous cattle at 24.81%. In Kolar district, crossbred cows dominate milk production, accounting for approximately 84.95% of the district's total milk output, with buffaloes contributing 10.39% and indigenous cattle 4.66%. On the other hand, in Shivamogga and Dharwad districts, crossbred cows

Table 1. Bovine population, milk production, cooperative and veterinary coverage in selected districts of Karnataka

Particulars	Kolar	Shivamogga	Dharwad	Karnataka
Total bovine population (No's)				
Indigenous	55416 (20.16)	456368 (63.56)	149877 (54.83)	6603967 (50.85)
Crossbred	173620 (63.15)	112108 (15.61)	43904 (16.06)	2912517 (22.43)
Buffalo	45876 (16.69)	149515 (20.82)	79513 (29.09)	3470505 (26.72)
Total bovine population	274912 (100.00)	717991 (100.00)	273294 (100.00)	12986989 (100.00)
Share of different animal to total milk production ('000 tonnes)				
Indigenous	13 (4.66)	79 (36.57)	23 (22.12)	1404 (24.81)
Crossbred	237 (84.95)	83 (38.43)	42 (40.38)	2515 (44.44)
Buffalo	29 (10.39)	54 (25.00)	39 (37.50)	1740 (30.75)
Total bovine milk yield	279 (100)	216 (100)	104 (100)	5659 (100)
Milk cooperative societies and its members				
Milk cooperative societies	972	476	172	14396
Members	178212	58421	13648	2436521
Veterinary institutes and its coverage				
Veterinary institutes (no.)	107	184	112	4112
Area per veterinary institute (sq.km)	37.19	46.08	38.04	46.64
Bovine population per veterinary institute (no.)	2569	3902	2440	3158

Source: Directorate of Economics and Statistics, District Statistics at a Glance-2020-21, Government of Karnataka

contribute around 40% of the milk production, with the remaining 60% contributed by indigenous cows and buffaloes. In Shivamogga district, indigenous cattle provide the largest share of milk production at 36.57%, while in Dharwad district, buffaloes contribute the highest share at 37.50%.

Table 1 provides an overview of the total number of dairy cooperative societies and their members across the selected districts. Kolar district leads with the highest number of milk cooperatives, totaling 972, and has 178,212 registered members. Shivamogga follows with 476 milk cooperatives and 58,421 members. Dharwad district has 172 dairy cooperatives with 13,648 registered members. Overall, Karnataka state hosts 14,396 milk cooperatives with a combined total of 2.436 million registered members. These cooperatives play a crucial role in improving the socio-economic conditions of dairy farmers by facilitating milk trade and offering essential input services.

Veterinary institutes, including veterinary dispensaries, hospitals, primary veterinary centers, and artificial insemination centers, provide essential

services to farmers across the state. Table 1 presents the availability of public veterinary services and animal health infrastructure facilities. The highest number of veterinary institutes are located in Shivamogga district (184), followed by Dharwad (112) and Kolar (107) districts. In Karnataka, a total of 4,112 veterinary institutes are actively involved in delivering livestock services and enhancing the performance of the livestock sector. The area served per veterinary institute is smallest in Kolar district (37.19 sq. km), compared to Dharwad (38.04 sq. km) and Shivamogga (46.08 sq. km). Additionally, the bovine population per veterinary institute is lowest in Dharwad (2,440), compared to Kolar (2,569) and Shivamogga (3,902).

Distribution of sample farmers and milch animal species

Table 2 presents the number of farmers who insured their cattle across the selected districts. Out of the 240 sample households, 99 households (41.25%) had insured their animals. The uptake of cattle insurance varied significantly among the districts: 66.25% of

Table 2. Distribution of sample farmers and insured milch animal species in selected districts

Category		Kolar	Shivamogga	Dharwad
Distribution of sample farmers as insured and non-insured categories				
Classified sample households	Insured	53 (66.25)	32 (40.00)	14 (17.50)
	Non-insured	27 (33.75)	48 (60.00)	66 (82.50)
Different milch animal species insured in sample districts				
No. of cattle insured	Indigenous cow	4 (4.94)	3 (5.00)	1 (4.17)
	Crossbred cow	70 (86.42)	51 (85.00)	21 (87.50)
	Buffalo	7 (8.64)	6 (10.00)	2 (8.33)
No. of non-insured cattle	Indigenous cow	16 (11.85)	120 (32.61)	40 (17.78)
	Crossbred cow	80 (59.26)	102 (27.72)	116 (51.56)
	Buffalo	39 (28.89)	146 (39.67)	69 (30.67)

Note: Figures in the parentheses indicate percentages to the total

farmers in Kolar district insured their cattle, compared to 40.00% in Shivamogga and only 17.50% in Dharwad. The higher insurance uptake in Kolar can be attributed to greater awareness among farmers, facilitated by the presence of numerous primary dairy cooperative societies and associated institutes. Additionally, farmers in Kolar predominantly rear high-value crossbred animals, particularly Holstein Friesians (HF), which requires insurance for protection. On the other hand, in Dharwad, where most farmers rear buffaloes and indigenous cattle, fewer animals were insured, reflecting the lower perceived need for insurance in that region.

Table 4 illustrates the distribution of milch animals insured by farmers. Out of a total of 893 animals reared by the 240 dairy farmers, 165 animals were insured, representing 18.48% of the total bovine population across the three districts. The distribution of insured animals varied by district: Kolar had the highest proportion of insured animals at 37.50%, followed by Shivamogga at 14.02%, and Dharwad at 9.46%. Among the insured animals, crossbred cows were most prominently covered, constituting over 85% of the total insured animals across all districts. Buffaloes followed, with 9% of insured animals in Kolar, 10% in Shivamogga, and 8% in Dharwad. The preference for insuring crossbred cows is likely due to their higher market value. Despite various initiatives by insurance agencies, the overall insurance coverage remains limited. This highlights the need for enhanced educational efforts to inform farmers about the benefits of cattle insurance.

Profile of cattle insured and non-insured households

To analyze the differences between insured and non-insured farmers, univariate tests were employed. Specifically, the Z-test statistics were used for normally distributed data, while the Mann-Whitney U test was applied to non-normally distributed data. This approach allowed for a comprehensive examination of the significant differences in various characteristics between the two groups of households.

The analysis of the demographic and socio-economic profiles of insured versus non-insured farmers reveals several key differences. Farmers who insured their cattle tended to be younger on average than those who did not. Specifically, the average age of insured farmers was 48 years in Kolar, 46 years in Shivamogga, and 41 years in Dharwad, compared to 50 years in Kolar and Shivamogga and 49 years in Dharwad for non-insured farmers. Significant age differences were observed in Shivamogga and Dharwad at the 10% level of significance.

In terms of education, insured farmers had slightly more years of schooling on average compared to non-insured farmers, with averages of 7 years in Kolar and 6 years in Dharwad, compared to 6 years and 5 years for non-insured farmers in these districts, respectively. In Shivamogga, the education level was the same for both groups, averaging 7 years. However, no significant differences in education levels were found across the districts.

Table 3. Profile of insured and non-insured farmers of selected districts

Sr. No.	Particulars		Kolar (n=80)	Shivamogga (n=80)	Dharwad (n=80)
1	Age of the farmer (years)	Insured	47.94 (14.04)	45.75 (10.14)	41.14 (15.19)
		Non-insured	50.44 (12.41)	50.23 (10.90)	48.97 (11.67)
		Z test	-0.81	-1.88*	-1.81*
		Mann Whitney U test	628.50	577.00*	321.00*
2	Education of the farmer (years)	Insured	6.92 (3.67)	6.53 (4.15)	5.57 (5.23)
		Non-insured	5.70 (3.83)	7.10 (3.86)	4.17 (3.96)
		Z test	1.37	-0.62	0.95
		Mann-Whitney U test	595.50	715.50	399.00
3	Family size of the household (no.)	Insured	5.45 (2.83)	5.84 (2.91)	6.93 (3.00)
		Non-insured	5.15 (2.23)	4.27 (1.41)	6.08 (3.66)
		Z test	0.53	2.84*	0.93
		Mann Whitney U test	708.50	489.00*	359.00
4	Land holding (hectares)	Insured	1.88 (2.19)	1.60 (2.01)	1.51 (2.50)
		Non-insured	2.08 (2.86)	1.38 (1.92)	2.20 (2.56)
		Z test	-0.31	0.47	-0.93
		Mann-Whitney U test	679.00	669.00	335.00
5	Farmers experience in dairy farming(years)	Insured	20.57 (11.99)	25.08 (17.83)	22.29 (14.08)
		Non-insured	25.98 (16.70)	27.38 (20.45)	34.45 (17.10)
		Z test	-1.40	-0.53	-2.53**
		Mann-Whitney U test	583.00	735.50	213.00**
6	Animal per household (no.)	Insured	2.94 (1.76)	5.22 (4.76)	5.36 (4.83)
		Non-insured	2.22 (1.15)	5.44 (4.38)	2.64 (2.66)
		Z test	2.20**	-0.21	2.04**
		Mann-Whitney U test	572.00**	694.50	251.00**

Note 1. Figures in the parentheses indicate standard deviation.

2. ***, ** & * denotes significant at 1, 5 and 10 per cent respectively.

Regarding family size, insured farmers had an average family size of 5 in Kolar, 6 in Shivamogga, and 7 in Dharwad, whereas non-insured farmers had family sizes of 5, 4, and 6 in these districts, respectively. Significant differences in family size were found only in Shivamogga, indicating a variation in the availability of family labour for dairying and agricultural activities.

The analysis also found no significant difference in land holding size between insured and non-

insured farmers across the districts. The average land holdings were 1.88 hectares in Kolar, 1.60 hectares in Shivamogga, and 1.51 hectares in Dharwad for insured farmers, compared to 2.08 hectares, 1.38 hectares, and 2.20 hectares for non-insured farmers, respectively.

Dairying experience was similar between insured and non-insured farmers in Kolar and Shivamogga, although a significant difference was noted in Dharwad. Additionally, insured farmers had a higher average

Table 4. Profile of insured and non-insured milch animal species

Sr. No.	Categories		Indigenous (n=184)	Crossbred (n=440)	Buffalo (n=269)
1	Age of animal (years)	Insured	6.88 (3.25)	5.44 (2.53)	6.25 (2.98)
		Non-insured	5.04 (3.92)	3.85 (2.60)	4.85 (3.15)
		Z test	1.95*	6.16***	1.70*
		Mann Whitney U test	393.50*	1.322E4***	998.00*
2	Order of Lactation (no.)	Insured	5.00 (1.85)	4.02 (1.83)	4.46 (1.64)
		Non-insured	3.10 (2.15)	2.80 (1.68)	3.40 (2.07)
		Z-test	2.81*	6.72***	2.31*
		Mann Whitney U test	325.50*	1.331E4***	1.126E3*
3	Milk yield (litre/ animal/ day)	Insured	2.64 (0.71)	11.95 (5.88)	4.78 (1.46)
		Non-insured	2.48 (1.06)	9.91 (4.87)	4.65 (1.43)
		Z test	1.34	4.69***	0.31
		Mann Whitney U test	363.50	9.536E3**	284.00
4	Market value of the animal (₹)	Insured	22618.75 (9948.98)	49790.21 (16242.70)	32178.57 (6467.69)
		Non-insured	12566.67 (8707.99)	29154.88 (18110.73)	27413.39 (14226.79)
		Z test	3.16**	12.00***	2.45**
		Mann Whitney U test	251.50**	9.536E3***	1.791E3**

Note: 1. Figures in the parentheses indicate standard deviation.

2. ***, ** & * denotes significant at 1, 5 and 10 per cent, respectively

number of animals per household, with 3 in Kolar and 5 in Dharwad, compared to 2 and 3 for non-insured farmers in these districts, respectively. Significant differences were observed at the 5% level of significance in Kolar and Dharwad, but no significant difference was found in Shivamogga. These findings are consistent with those of Singh (2015), highlighting comparable trends in the demographic and socio-economic characteristics of insured versus non-insured dairy farmers.

Profile of insured and non-insured animals on different attributes

The univariate test was employed to examine differences between insured and non-insured animals concerning various characteristics, including age, lactation order, milk yield, and market value of different bovine species, as detailed in Table 4. The analysis revealed that the average age of insured animals was higher compared to non-insured animals, with averages of 7 years for indigenous cattle, 5 years for crossbred cattle, and 6 years for buffaloes. In contrast, non-insured animals had average ages of 5 years for

indigenous cattle, 4 years for crossbred cattle, and 5 years for buffaloes. Significant differences were found in the average age of insured versus non-insured animals across all three bovine species. This suggests a higher propensity for insurance among older animals. Additionally, insured animals generally belonged to a higher lactation order compared to non-insured animals for all three bovine species. The differences in lactation order between insured and non-insured animals were statistically significant across the board.

Regarding milk yield, no significant differences were observed between insured and non-insured animals for indigenous cattle and buffaloes. However, a significant difference in milk yield was noted for crossbred cows, with insured animals showing higher yields. The market value of insured animals was also significantly higher than that of non-insured animals. Specifically, insured indigenous cattle had an average market value of ₹22,619, crossbred cows ₹49,790, and buffaloes ₹32,179, compared to ₹12,567, ₹29,155, and ₹27,413 for non-insured indigenous cattle, crossbred cows, and buffaloes, respectively. Significant differences in market

Table 5. Constraints faced by farmers and agencies in opting for cattle insurance and claim settlement

Sr. No.	Constraints	Kolar	Shivamogga	Dharwad
i. Constraints faced by the farmers in opting the cattle insurance				
1	Lack of awareness about rules and regulations and procedural complexities in cattle insurance	I (70)	I (74)	I (71)
2	Insurance not covering other than death of animal	II (69)	II (67)	II (68)
3	Insurance is not done at the actual market value of animals	III (64)	III (66)	V (59)
4	High insurance premium rate (cost of insurance)	IV (63)	IV (65)	III (64)
5	Irregularity in follow up the insurance and communication difficulty between client and insurance agency	V (54)	VI (54)	IV (63)
6	No faith in scheme and insurance agencies	VI (52)	VII (52)	VI (52)
7	Nepotism (possibility of insuring selected animals and favoritism towards friends and relatives)	VII (49)	V (62)	VII (45)
8	Lack of delivery mechanism at the doorstep	VIII (46)	VIII (49)	VIII (44)
ii. Constraints faced by the farmers at the time of claim settlement				
1	Tedious rules and regulations	I (69)	I (70)	I (71)
2	Delay in settling the claim amount	III (63)	II (66)	II (67)
3	Low claim payment	IV (56)	III (62)	III (59)
4	Non-cooperation of insurance agents at the time of claim	II (66)	IV (56)	V (54)
5	During death of animals, agents take long time to come and certify the death	V (53)	V (53)	IV (56)
iii. Constraints faced by the cattle insurance agencies while insuring the animals				
1	Difficulty in arranging the documents for the insurance	I (71)	I (73)	IV (59)
2	Hiding the correct and reliable information on animals by the farmers	II (65)	III (60)	V (45)
3	Farmers are less interested to insure their animals	III (60)	IV (57)	I (73)
4	Farmers are not aware of cattle insurance	V (45)	V (45)	II (66)
5	Lack of information about who are interested to insure their animals	IV (58)	II (66)	III (59)
iv. Constraints faced by the cattle insurance agencies at the time of claim settlement				
1	Collecting reliable documents from farmers for claim involves tedious work	I (69)	I (71)	II (67)
2	Non-adherence of dairy farmers to the rule and regulation of cattle insurance	II (68)	II (67)	I (72)
3	Difficulties in identifying the insured animal based on available proof	IV (49)	III (56)	III (57)
4	Shortage of insurance agents to attend all the cases	III (57)	V (46)	IV (49)
5	Lack of timely information about the death of animal	V (47)	IV (50)	V (46)

Note: Figures in the parentheses indicate mean score

Table 6. Reason for not insuring cattle

Sr. No.	Reason	Not insuring		
		Kolar (n=27)	Shivamogga (n=48)	Dharwad (n=66)
1	Dairy farmers could not afford cattle insurance	1 (3.70)	1 (2.08)	3 (4.55)
2	Animals are rarely affected by the diseases	3 (11.11)	7 (14.58)	6 (9.09)
3	Farmers felt that no use of cattle insurance	5 (18.51)	4 (8.33)	9 (13.64)
4	High premium rate and complexities in procedure for claiming insurance	7 (25.92)	12 (25.00)	10 (15.15)
5	Lack of trust on insurance agencies	4 (14.81)	5 (10.42)	7 (10.61)
6	Dairy farmers are not known about the detail procedure of cattle insurance	2 (7.41)	4 (8.33)	12 (18.18)
7	Lack of interest and laziness among farmers to take up insurance and renewing their cattle insurance.	1 (3.70)	8 (16.67)	8 (12.12)
8	Biasness by the insurance agencies between the farmers and also among animals.	4 (14.81)	7 (14.58)	11 (16.67)
Total		27 (100.00)	48 (100.00)	66 (100.00)

Note: Figures in the parentheses indicate percentages to the total

value were evident across all three bovine species.

Overall, the findings indicate that insured animals are typically older, belong to higher lactation orders, and have higher market values compared to their non-insured counterparts, highlighting a trend toward insuring more valuable and experienced animals.

Constraints faced by farmers and stakeholders

This section explores the constraints encountered by farmers when accessing cattle insurance policies. The constraints, along with their mean scores and ranks, are detailed in Table 5 (i). Eight major constraints were identified as barriers to adopting cattle insurance among dairy farmers in the study area. The foremost constraint across all three districts was a lack of awareness about the rules and regulations governing cattle insurance. This was followed by the complexity of the insurance procedures and the limited coverage of the insurance policy, which often excludes losses other than death. In Kolar and Shivamogga districts, the third most significant constraint was the insurance not being provided at the actual market value of the animals. On the other hand, in Dharwad district, high insurance premium rates were ranked as the third major constraint, and this issue was ranked fourth in Kolar and Shivamogga districts. Irregularities in following up on insurance claims and difficulties in communication between clients and insurance agencies were identified as the fourth most critical constraints in Dharwad.

Other significant issues included a lack of trust in the insurance scheme and agencies, nepotism-where there is a possibility of preferential treatment toward certain animals or individuals-and inadequate delivery mechanisms for insurance services at the farmers' doorsteps. These findings are consistent with previous studies by Singh (2015) and Khan *et al.* (2014), which identified similar constraints in the context of livestock insurance.

The effectiveness of a cattle insurance scheme is significantly reflected in the settlement of claims. However, farmers often encounter several constraints when claiming insurance benefits. These constraints, along with their mean scores and ranks, are detailed in Table 5 (ii). The most prominent constraint reported by farmers in Kolar, Shivamogga, and Dharwad was the cumbersome nature of the rules and regulations governing insurance claims. This issue was ranked first in all three districts, with Garrett scores of 69 for Kolar, 70 for Shivamogga, and 71 for Dharwad. Delay in claim settlement emerged as the second major constraint in Shivamogga and Dharwad, while non-cooperation from insurance agents during the claim process was the second most significant constraint in Kolar. Low claim payments were ranked as the third major constraint by farmers in Shivamogga and Dharwad, whereas Kolar farmers ranked this issue fourth. Additional constraints included the lengthy time required for insurance agents to arrive and certify the death of the animal, further

complicating the claims process. These issues highlight the need for streamlined procedures and improved communication to enhance the efficiency of insurance claim settlements.

The constraints faced by insurance agencies in insuring animals were analyzed, and the results are presented in Table 5 (iii). In Kolar (mean score 71) and Shivamogga (mean score 73), the primary constraint was difficulty in arranging the necessary documents for insurance. In Dharwad, the main constraint was farmers' lack of interest in insuring their cattle, with a mean score of 73. The second major constraint varied by district: in Kolar, it was the issue of concealing accurate and reliable information about the animals; in Shivamogga, it was the lack of information about interested farmers; and in Dharwad, it was the lack of awareness among farmers regarding cattle insurance.

This section examines the constraints encountered by insurance agencies in settling insurance claims, with the results detailed in Table 5 (iv). The primary challenges faced by insurance agencies across all three study districts were the cumbersome process of collecting reliable documentation from farmers and the non-adherence of dairy farmers to insurance rules and regulations. The submission of necessary documents for claims often involved a tedious and time-consuming process, which significantly impacted the efficiency of claim settlements. Additionally, the frequent non-compliance with insurance protocols by farmers further exacerbated the difficulties faced by insurance agencies in managing and processing claims effectively. These issues highlight the need for improved procedures and stricter adherence to guidelines to streamline the claims process and enhance the overall efficiency of cattle insurance schemes.

The primary constraint for insurance agencies was the challenge of collecting reliable documents from farmers for claims, which was ranked first with Garrett scores of 69 in Kolar and 71 in Shivamogga. In Dharwad, the top constraint was the non-adherence of dairy farmers to cattle insurance rules and regulations, with a mean score of 72. Other significant constraints faced by insurance agencies included difficulty in identifying insured animals based on available proof, a shortage of insurance agents to handle cases, and a lack of timely information about animal deaths.

Reasons for not insuring cattle

The reasons for dairy farmers' reluctance to adopt cattle insurance are presented in Table 6. In Kolar and Shivamogga districts, the primary reasons cited were the high premium rates and the complexities involved in the insurance claim procedures, with 26% and

25% of farmers respectively identifying these issues. In Dharwad, the predominant reason was a lack of knowledge about the insurance process, reported by 18% of farmers. Other significant reasons included a general lack of interest and perceived laziness among farmers, particularly in Shivamogga and Dharwad, respectively. Additional concerns included a belief that cattle insurance is not beneficial, distrust in insurance agencies, the rarity of disease affecting their animals, and the perceived unaffordability of insurance. These factors collectively contribute to the low uptake of cattle insurance among dairy farmers in the study areas.

CONCLUSION

The constraints faced by dairy farmers in Kolar, Shivamogga, and Dharwad varied by district. However, common issues across all districts included a lack of awareness about insurance rules and regulations, coverage limitations (not including losses other than death), undervaluation of animals, and complex procedures for filing claims. For insurance agencies, the major constraints were difficulty in arranging necessary documents and non-adherence to insurance rules and regulations by dairy farmers. The study indicates that simplifying the claim settlement process is crucial, as this emerged as a significant barrier to adopting cattle insurance. High premiums and complex procedures for claiming insurance were identified as the primary reasons for not insuring cattle. Additional factors included low rates of disease incidence and a lack of trust in insurance agencies.

To enhance the viability of cattle insurance, the government should improve veterinary services to reduce mortality rates in the study area. Increased enrollment in dairy cooperative societies could also lead to greater cattle insurance coverage. Overall, cattle insurance is a valuable risk mitigation strategy that can help farmers stabilize their income amid risks and uncertainties.

ACKNOWLEDGEMENT

We gratefully acknowledge the scholarship provided to the first author by the ICAR-National Dairy Research Institute, Karnal. We also extend our sincere thanks to the members of the advisory committee for their invaluable guidance. Additionally, we appreciate the cooperation and assistance received from various organizations and dairy farmers involved in this study.

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