LIVESTOCK INSURANCE IN KARNATAKA – A CRITICAL ANALYSIS

MANJUNATHA, N

DEPARTMENT OF VETERINARY AND ANIMAL HUSBANDRY EXTENSION EDUCATION
VETERINARY COLLEGE, SHIVAMOGGA-577 204
KARNATAKA VETERINARY, ANIMAL AND FISHERIES SCIENCES UNIVERSITY, BIDAR 585 401

FEBRUARY, 2022

LIVESTOCK INSURANCE IN KARNATAKA – A CRITICAL ANALYSIS

Thesis submitted to the,

KARNATAKA VETERINARY, ANIMAL AND FISHERIES SCIENCES UNIVERSITY, BIDAR-585 401

in partial fulfillment of the requirements for the award of the degree of

MASTER OF VETERINARY SCIENCE

In

VETERINARY AND ANIMAL HUSBANDRY EXTENSION EDUCATION

By

MANJUNATHA, N

DEPARTMENT OF VETERINARY AND ANIMAL HUSBANDRY EXTENSION EDUCATION

VETERINARY COLLEGE, SHIVAMOGGA-577 204

KARNATAKA VETERINARY, ANIMAL AND FISHERIES SCIENCES UNIVERSITY, BIDAR 585 401

FEBRUARY, 2022

KARNATAKA VETERINARY, ANIMAL AND FISHERIES SCIENCES UNIVERSITY, BIDAR

DEPARTMENT OF VETERINARY AND ANIMAL HUSBANDRY EXTENSION EDUCATION VETERINARY COLLEGE

SHIVAMOGGA

CERTIFICATE

This is to certify that the thesis entitled **"*LIVESTOCK INSURANCE IN KARNATAKA – A CRITICAL ANALYSIS*"** submitted by **Mr. MANJUNATHA, N.,** I.D. No. **MVSK 1903** in partial fulfilment of the requirements for the award of **MASTER OF VETERINARY SCIENCE** in **VETERINARY AND ANIMAL HUSBANDRY EXTENSION EDUCATION** of the Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar is a record of research work carried out by him during the period of his study in this university under my guidance and supervision and the thesis has not previously formed the basis for the award of any degree, diploma, association ship, fellowship or other similar titles.

Shivamogga.
Date:

Prof. K.C. VEERANNA
Hon'ble Vice Chancellor,
KVAFSU, Bidar, Karnataka

APPROVED BY:

Chairperson : _____
(Prof. K.C. VEERANNA)

Members :1. _____
(Dr. GOPALA, G.T.)

2. _____
(Dr. MANJUNATHA, L.)

3. _____
(Dr. JAYASHREE, R.)

4. _____
(Dr. GIRIDHAR, K. S.)

Dedicated To

My Family,

Farmers, Friends and Teachers.

ACKNOWLEDGEMENT

*Firstly, I would like to thank the **ALMIGHTY** for giving me the opportunity to embark on trials that yielded this thesis. This work is a product of numerous contributions from different individuals that I am pleased to acknowledge.*

*I avail this opportunity to express my deep sense of gratitude and warm regards to **Dr. K.C. Veeranna,** Hon'ble Vice Chancellor, Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar and Chairman of my Advisory Committee. His guidance, inspiration and advice helped me to grow in my professional and academic competence I will always remember with gratitude the innumerable ways he had guided, inspired, and advised me during time at Veterinary College Shivamogga.*

*It gives me immense pleasure to convey my sincere thanks to **Dr. Gopala, G.T.** Associate Professor (independent charge) and Head, Department of Veterinary and Animal Husbandry Extension, Veterinary College Shivamogga, for his valuable guidance, constant advice and support throughout this study as a member of the advisory committee.*

*I am extremely grateful, to **Dr. Manjunatha, L.** Associate Professor, Department of Veterinary and Animal Husbandry Extension Education, Veterinary College, Bengaluru. Motivated with his inspiring guidance, valuable suggestions at all stages of research work.*

*My deep sense of gratitude and thanks to **Dr. Jayashree, R.** Professor and Head, Department of Animal Genetics and Breeding, Veterinary College Shivamogga, for the valuable suggestions and constant help during my work.*

*I am extremely grateful and indebted to **Dr. Giridhar.K.S.** Assistant Professor, Department of Animal Nutrition, Veterinary College Shivamogga, for his constant guidance and support during my work.*

I wish to express my sincere gratitude to ***Dr. Harisha. M****, Assistant professor, Department of Veterinary and Animal Husbandry Extension, Veterinary College, Shivamogga, for his valuable suggestions, constant support, guidance, and sincere advice extended to me throughout the study and shaping the thesis.*

I am glad to express my heartfelt gratitude to ***Dr. Anant Rao Desai,*** *Assistant professor, Department of Veterinary and Animal Husbandry Extension, Veterinary College, Bidar, for his valuable suggestions, constant support, guidance, and sincere advice extended to me throughout the study and shaping the thesis.*

I take this opportunity to Convey my gratitude to State department of animal husbandry and veterinary services, Government of Karnataka, for having given me an opportunity to pursue my masters on deputation.

My deep sense of gratitude and profound thanks to my department colleagues ***Dr. Chidananda Reddy*** *and* ***Dr. Giriraj, N.*** *My senior colleague* ***Dr. Yallappa, K.*** *Junior colleagues* ***Dr. Suresh Sajjan, Dr. Basappa Jaller, Dr. Suresh Rathod*** *and* ***Dr. Jayashree*** *for their moral support during my research work. My heartfelt thanks to* ***Miss. Shwetha Manjunatha,*** *non-teaching supporting staff of the Department of Veterinary and Animal Husbandry Extension Education, Veterinary College Shivamogga, for their kind cooperation and help during my research.*

Diction is not enough to express my unbound gratitude and love to my beloved parents ***Smt****.* ***Drakshayinamma,*** *father Late* ***Sri****.* ***Kallappa*** *and my relatives:* ***Smt. Susheelamma - Sri. Rudrappa, Smt. Mangala - Sri Basavaraj, Smt. Kavitha - Sri. Kotresh, Smt. Gangamma - Sri. Channabasappa, Smt. Geethamma - Sri. Prakash, Mangala - Shanthakumar,*** *and* ***Kavya - Nagabhushan.***

I am extremely thankful to the support given by buddings of our family ***Nandini, Usha, Mamatha, Guruprasad, Chandana, Nandeesh*** *and* ***Ajay*** *during my academic life.*

I wish to express my sincere gratitude to my brother-in-law ***Dr. Kotresh, M****. and* ***Kotresh, K.*** *for their valuable suggestions, guidance, and sincere advice extended to me throughout the study.*

Special thanks to all the farmers, veterinarians of Dept of AH & VS, milk unions and KSWDC, bankers, staff and officers of insurance agency for assisting me in data collection during my research work.

No words are enough to express my heartiest gratitude to all the ***respondents*** *of the study for their help and cooperation during data collection.*

Where emotions are involved, words cease to mean, I could not have the words to express heartiest and everlasting thanks to my wife, ***Mrs. Kavitha*** *and my daughters* ***Sannidhi*** *and* ***Sanidhya*** *for their company, sacrifice and understanding, without which it could not have been possible to complete this work. Their patience and encouragement rekindled my desire for success.*

Date: ***(MANJUNATHA, N)***

CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

LIST OF ABBREVIATIONS

Abbreviation		Description
aAQUA	:	Almost All QUestions Answered
ACU	:	Adult Cattle Unit.
AH	:	Animal Husbandry
APL	:	Above Poverty Line
ATM	:	Automated Teller Machine
BAHS	:	Basic Animal Husbandry Statistics
BPL	:	Below Poverty Line
CR	:	Crop Insurance
CSS	:	Centrally Sponsored Scheme
DAHVS	:	Department of Animal Husbandry and Veterinary Services
DCMU	:	District Cooperative Milk Unions
FAO	:	The Food and Agriculture Organization
FI/NGO	:	Financial Institution/Non-Governmental Organizations
FY	:	Financial Year
GCI	:	Group Cattle Insurance
GDP	:	Gross Domestic Product
GIC	:	General Insurance Corporation of India
GoI	:	Government of India.
GoK	:	Government of Karnataka.
GVA	:	Gross Value Added
ICICI	:	Industrial Credit and Investment Corporation of India
ICT	:	Information and Communications Technology
IFFCO-TOKIO	:	Indian Farmers Fertiliser Co-operative Limited -Tokio
IRDA	:	Insurance Regulatory and Development Authority
IRDP	:	Integrated Rural Development Programme.
IRMA	:	Institute of Rural Management Anand
KMF	:	Karnataka Milk Federation
KSWDC	:	Karnataka sheep and wool development corporation
LI	:	Livestock Insurance
M	:	Million

MPCS	:	Milk Producers Cooperative Societies
MS Excel	:	Micro Soft Excel
NGO	:	Non-Governmental Organization
NLM	:	National Livestock Mission.
PM	:	Post-Mortem
PTD	:	Permanent Total Disability
PUC	:	Pre University College
RFID	:	Radio Frequency Identification Device
SA	:	Strongly Agree
SAU	:	Standard Animal Units
SBI	:	State Bank Of India
SC	:	Scheduled Cast
SCP	:	Special Component Plan
SPSS	:	Statistical Package for the Social Sciences
ST	:	Schedule Tribe
TSP	:	Tribal Sub Plan
UAID	:	Unique Animal Identification
VCS	:	Village Co-operative Society

Introduction

I. INTRODUCTION

Globally, the livestock sector is gaining importance due to the increased demand for livestock produce. This demand has also influenced consolidation of production especially at the producers' level. Livestock producers in India are now shifting to high producers and intensive rearing system for better profits and sustainability. India is the shelter for 535.78 M livestock population, 192.49 M cattle, 109.85 M buffaloes, 74.26 M sheep, 148.88 M goats, and 9.06 M pigs (Livestock census, 2019). India stands first in total livestock population and buffalo population, ranked second in cattle and goat population whereas, ranked third in sheep population (FAO, 2021).

In 2020, India's milk and meat production was 198.44 and 8.60 million tons, ranked first and fifth in the world respectively. Egg production in 2020 was 1148.38 billion number and ranked third in the world (FAO,2021).

The contribution of livestock to the total GDP/GVA is significantly improved from 4.82 per cent in 1980-81 to 5.21 per cent in 2019-20 The share from livestock to the agriculture section increased from 13.88 to 28.36 per cent. (DADF, 2020)

Livestock provides nutritious food, act as ATM in financial emergencies (Anonymous, 2011), provides employment throughout the year for the farming communities and generates sustainable income through sale of animal and its products viz., milk, milk products, egg, meat, wool, hide etc. Income is also generated by sale of dung and using livestock for draught and transportation on rent. It reduces expenditure on agriculture by providing farmyard manure and draught power for agricultural operations. Dung cakes are the common source for domestic

fuel for rural families. Thus, livestock farming provides sustained income and acts as a shock absorber for the financial shocks.

Livestock farming faces constant risks which include diseases and disorders, high sensitivity of crossbreds to the climatic conditions, high purchase price of livestock, ever increasing feeding cost, high healthcare expenses, infertility and repeat breeding, disasters (Koirala and Bhandari, 2018), accidental ingestion of poisonous chemicals, toxic plants, improper feeding, bite of poisonous creatures, etc., leading to performance loss or disability of the animal rendering useless for the intended job reared for and sometimes even leads to death resulting in severe economic loss for livestock owners.

Due to its immense importance, risk mitigation in livestock production becomes an important aspect (Ahmad *et al*. 2019). In the absence of adequate provisions for compensation or assistance for meeting losses, there is a need of protection against sudden and unexpected loss or damage to their major assets and investments. The major risk mitigating tools practiced in rural India over the years are utilization of their savings, borrowing money from money lenders, sale of livestock, getting loan from relatives and institutions, jewellery hypothecation, utilizing government subsidy, sale of land and asset (Kumar, 2016). Farm diversification is also an important risk management tool which should be essentially practiced by resource poor farmers (Njavro *et al.,* 2007). It is well noted that livestock insurance is a relevant strategy in managing different risks related to livestock farming but very little attention has been paid to address the livestock insurance needs of farmers. Livestock insurance provides a lumpsum benefit, if the animal listed in the policy dies from one of the perils specified in the contract (Mann, 2015).

Livestock insurance was first started in Germany in the year 1909 by collecting compensation fund to insure livestock (Subhash *et al.,* 2016). In India, insurance market especially in agricultural sector is underdeveloped. The idea of livestock insurance emerged in India four decades ago and yet not reached in a significant way till date. In India, "Cattle insurance scheme" by Small Farmers Development Agency (SFDA) was started in 1971, in which the nationalised banks began to finance the purchase of cattle and agreed to collect premium from beneficiaries covered for one year (Singh, 2009). General Insurance Company (GIC) was established in 1972 and made general insurance including livestock insurance. The GIC and the four subsidiaries such as National Insurance Company Ltd., The New India Assurance Company Ltd., The Oriental Insurance Company Ltd., and United India Insurance Company Ltd., were the prominent players in livestock insurance sector (Singh *et al.*, 2020). In 1983, "Cattle insurance policy" under IRDP the Livestock and asset insurance was given to the poor farmers along with subsidised loans (50 per cent). It was designed by GIC and implemented through four public sector insurance companies from 1983 onwards. In 1997, Insurance regulator, IRDA was set up. In 2002, banks were allowed to sell insurance plans.

Government of India initiated two schemes to provide insurance to cattle rearers and sheep breeders against income losses due to death of sheep and cattle, viz., Livestock Insurance Scheme and Sheep Insurance Scheme. Centrally Sponsored Scheme (CSS) on livestock insurance on a pilot basis was launched during 2005-06 for three years up to 2007-08 in 100 selected districts of the country (Choudhary and Srinivasan, 2011). Fifty per cent premium subsidy was availed from the Central government. The benefit of subsidy is being provided to a maximum of two animals per beneficiary for a policy of maximum of three years. Premium should not exceed

4.5 per cent for annual policies and 12 per cent for three-year policies. However, the actual premium rate varies substantially from state to state. In 2007-08, the premium rate for a three-year policy varied between 3.6 to 11.5 per cent across different insurance companies in different states (Choudhury and Srinivasan, 2011).

Further, the insurance scheme was implemented in all the districts of the country from 21st May 2014 under National Livestock Mission (NLM). Maximum limit of livestock covered per beneficiary was increased from two animals to five. Animals covered under any other insurance scheme were not considered under this scheme (DADF, 2020).

Similarly, Group Cattle Insurance scheme was steered by District Cooperative Milk Unions (DCMU) in selected districts of Karnataka which were executed under the assistance of Karnataka Milk Federation (KMF) and reached through Milk Producers Cooperative Societies (MPCS) to dairy farmers by providing premium subsidy to the extent of 50 per cent (25% DCMU + 25% KMF) and remaining 50 per cent premium to be borne by the beneficiary farmers (Rohith *et al.*, 2019). From 2020-21 all milk unions in the state have started insuring the dairy animals under the Group Cattle Insurance Scheme.

Every year many farmers end up losing livestock wealth due to various diseases and disasters which negatively affects their economic status and livelihood. Livestock insurance can guarantee protection to farmers against an unexpected loss of their income; and bring in sustainability to the livestock farming (FAO, 1992). Livestock insurance (LI) is an important risk mitigation tool that is available but not tapped effectively in rural India. The adoption of livestock insurance among the livestock farmers is still very low and remains grossly neglected. The importance of

livestock insurance is yet to be realized by the farmers and policy makers. Not many studies have been conducted on livestock insurance till date to highlight its awareness and constraints in India and in the state of Karnataka.

Considering the importance of above-stated reasons and facts an attempt was made to understand the status and trend of the livestock insurance in Karnataka with a study entitled "Livestock insurance in Karnataka- A critical analysis" with following objectives.

1.1 OBJECTIVES

1. To study the status of livestock insurance in Karnataka.
2. To study the level of awareness and adoption of livestock insurance among livestock owners.
3. To study the constraints in livestock insurance.

1.2 NEED AND SCOPE OF THE STUDY

It is well noted that livestock insurance is a relevant strategy in managing different risks related to livestock farming but very little attention has been paid to address the livestock insurance needs of farmers. Major thrust needs to be given by both the Central and State Governments to protect the resource poor's livestock asset through Livestock Insurance schemes and to encourage the livestock insurers, so that, many private players also would come forward to take part in livestock insurance.

Comprehensive studies on livestock insurance in Karnataka state were absent and a critical analysis involving multiple stakeholders of the sector was needed. Hence, the present study was selected.

The results would help policymakers and administrators to develop suitable policies to improve the coverage of livestock insurance in Karnataka state.

1.3 LIMITATIONS OF THE STUDY

An exploratory research design was adopted for the present study. All the limitations associated with it by default set limitations for the study. It is a single student research having limited time and resources. The study was limited to two taluks each from one district, from each revenue division of Karnataka. So, the results are relevant only to the area under study. The results may be generalized to the other areas where there is an existence of similar agroclimatic and socio-economic conditions.

The study is based on the individual response of the respondents which may not be free from bias, despite all the necessary precautions while collecting the data to achieve the objectives systematically and scientifically by the investigator.

Review of Literature

II. REVIEW OF LITERATURE

All the literature pertaining to the livestock insurance are presented under the following sub- headings.

2.1 Status of livestock insurance in Karnataka.

2.2 Socio-economic profile of livestock farmers.

2.3 Awareness level and adoption of livestock insurance.

2.4 Constraint analysis of livestock insurance.

2.1 STATUS OF LIVESTOCK INSURANCE IN KARNATAKA

Choudhary and Srinivasan (2011) in their study on insurance schemes of government of India reported that the Government of Rajasthan started three insurance schemes namely Kamdhenu, Bhais Bima and Avika Kavach schemes against death of cows, buffaloes, and sheep respectively. Under livestock and sheep insurance, the coverage was less than 5 per cent. In 2009-10, a total of 6.8 lakh cattle and buffaloes (BAHS, 2007) were insured under the livestock insurance scheme, which constituted about 3.04 per cent of the total number of female exotic and cross breed cattle and buffaloes in the 100 selected districts. Under sheep insurance, about 4 lakhs of sheep were covered by the end of March 2009, which constituted less than 1 per cent (0.7 %) of the total sheep population (BAHS, 2003) of the country.

Mohapatra *et al.* (2014) in their study on performance of agricultural insurance in Punjab State observed that the status of livestock insurance in the state of Punjab was better than many states as 4,53,100 animal heads in total were insured by the four subsidiary insurance companies of General Insurance Corporation of India (GIC).

Trivedi and Soni (2014) in their study on Cattle Insurance in Villages of Gandhinagar District reported that in 1974, with the support of Central and State government, cattle insurance was tested on pilot basis in Gujarat. It emphasized on providing insurance financed by banks, to animal owners and to beneficiaries of Integrated Rural Development Programme (IRDP). It was further decided that insurance procedure would be simplified, and long-term premium discounts would be offered, so that maximum non-financed cattle could be covered with due support of District Rural Development Agency. It was brought out that cattle insurance is being offered by all four subsidiaries of General Insurance Corporation of India (GIC)- National Insurance Company, Oriental Insurance Company, United India Insurance Company and New India Assurance Company. Under non-IRDP scheme (market scheme) special schemes have been designed for specific areas covered by cooperatives.

Mann (2015) from his study on the awareness and perception of dairy farmers towards cattle insurance in Punjab, reported that 85 per cent of the respondents insured cross breed animals, 33 per cent of the respondents' insured buffaloes and only one per cent of farmers insured indigenous animal. Further, he has observed that 54 per cent of the respondent purchased the insurance through government department schemes and 33 per cent by directly contacting insurance agent, 12 per cent through private bank agents and only one per cent by other means. He reported that the out of the insured respondent farmers only one per cent purchased insurance to all their existing animals and the rest insured only part of their available animals.

Chauhan *et al.* (2016) in their study on pig production system as a source of livelihood in Indian scenario: An overview, reported that in states of North-East India, almost every household has a small piggery unit. There is a huge demand for pigs because people of this state prefer pork than other meats. Majority of the pigs in this hilly region are reared in intensive production system and fed with homemade cooked feed including kitchen waste.

Singh *et al.* (2016) studied on livestock insurance in Haryana and reported that scheme functioned well by settling about 87 per cent of the claims and was financially viable in short and long run for the agencies.

Subhash *et al.* (2016) studied the status and determinants of livestock insurance in India and reported that, despite several players in the livestock insurance market, more than 80 per cent of the livestock insurance in India was done by the public sector insurance companies. Despite concerted efforts in the past, the progress in livestock insurance has been slow. However, in recent years it has picked up by 2012-13, about 80 million animals were insured which is nearly about 16 per cent of the livestock population in India. Further, there exists, a wide variation in coverage of livestock insurance, between the states.

About 9.15 and 3.32 per cent of the livestock population was covered under insurance in states of Haryana and Rajasthan respectively, in 2012 and out of the insured, only about 11 and 6 per cent of the households were reported to have renewed the livestock insurance in study areas of states of Haryana and Rajasthan respectively. About one-third of the livestock rearing households availed the livestock insurance facilities. In Haryana and Rajasthan, the extent of livestock cover was poor and further the renewal of insurance policies by policyholders was still poor (Subhash *et al.*, 2016).

Bora (2017) conducted study on vulnerability of the livestock sector in changing climate conditions in India and reported that at national level, only six per cent of the animal heads (excluding poultry) were insured.

Koirala and Bhandari (2018) in their study on livestock insurance as a tool to reduce economical loss of farmers from climate change related hazards in Nepal, reported that 47 per cent of the respondent farmers insured their animals in Kaski, 33 per cent in Jhapa and 20 per cent in Dolakha districts.

Pallavi *et al.* (2018) in their study on "Evaluation of alternate animal identification techniques and livestock insurance products in Bengaluru Rural district of Karnataka" reported that the plastic tag is a very common method of identifying animals, and the bar code system can be incorporated into the tag, which facilitates reading, transmission, and registration of data. Out of the total animals insured 93 per cent of the animals were having only plastic tag while 7 per cent of the animals were having both plastic tag and branding together.

Higher proportion of plastic tag was due to its ease of application, comparatively less labour requirement, cost effectiveness and not having adverse effects on animal health.

Rohith *et al.* (2019) from their analysis of the performance of cattle insurance in selected districts of Karnataka observed that number of animals insured were found to be higher under Group Cattle Insurance scheme (26278 to 37477) than NLM scheme (970 to 7360) in Kolar district during 2015–18. This was because GCI scheme was easily accessible to the farmers which involved lower transaction cost, no restriction on number of animals to be insured, low premium rate, high claim paid per animal and high claim to premium ratio to NLM scheme. The lowest claim to

premium percentage was observed in Dharwad under NLM scheme because of dominance of buffaloes and indigenous cattle as compared to crossbred cattle. Farmers were not interested to insure indigenous cattle and buffaloes. The coverage of cattle insurance is still very low, so there is a need put effort by the insurance implementing agencies to increase the coverage.

Singh *et al.* (2019) in their study on profile of dairy animals covered and farmers adopted livestock insurance in Karnal district of Haryana, reported that majority (87 %) of the respondent farmers insured only two animals. Out of the total 75 sampled households, 65 households insured two animals as benefit of subsidy was provided to maximum of two animals per family.

Singh and Chandel (2019) studied on factors influencing in adoption of livestock insurance with special reference to Haryana and stated that in case of cross breeds, the odds ratio increased by 2.8 per cent while probability raised by 0.40 per cent with every 1 per cent increase in percentage of crossbreeds. It reveals that raise in herd size and high yielding animals in the herd would motivate the farmers to go for the adoption of LI.

Singh *et al.* (2020) compiled evidence-based reviews on status of livestock insurance in India and recorded that, in case of Indian states, although the situation was uneven but prospectively better. Centrally Sponsored Scheme (CSS) on Livestock Insurance on a pilot basis was launched during 2005-06 and 2006-07 in 100 selected districts of the country. The premium of the insurance was subsidized to the tune of 50 per cent. The basic premium rate is 4 per cent of the sum insured. The premium rates may vary from company to company and ranged between 2.69 per cent to 4.25 per cent for one year coverage and ranged between 6.85 to 10.59 per

cent for three-year indemnity. In 2016, Karnataka decided to implement the Livestock Insurance Scheme to encourage farmers to insure their milch cattle and buffaloes. Under the scheme, a maximum of five cattle/buffaloes would be covered by a farm family. (Prabhu, 2015)

Nepali (2021) studied on farmers perception on status of livestock insurance in Surkhet district, Nepal and reported that majority of livestock farmers agreed insurance as an effective risk management tool but only 64.44 per cent of total respondent farmers insured their livestock, out of which only 37.93 per cent had renewed their insurance package. 22.28 per cent of goats, 17.48 per cent of buffaloes, 7.89 per cent of cattle, 25 per cent of pigs were insured. About 62.07 per cent respondent farmers insured for first time, 20.69 per cent had renewed once, while 17.24 per cent respondents had renewal status for more than one year. Cows, bullock, buffaloes, male and female yaks, sheep, goat, pig, chicken, swan, and ducks were insured based on the premium rate fixed by the Beema Samithi. 75 per cent of premium subsidy was availed by government, 90 per cent of the claim amount was dispersed to farmer. Some special offers raised by cooperatives to cover health insurance to the cattle owner, subsidy on cattle feed and medicine on insuring the animal.

2.2 SOCIO-ECONOMIC PROFILE OF LIVESTOCK FARMERS

2.2.1 Age

Khan *et al.* (2013) in their study on analysis of the willingness to pay for cattle and buffalo insurance which was conducted for dairy farmers in central India revealed that14 per cent of the total respondent considered for the study were young (below 30 years), 65 per cent were middle aged (30-50 years) and 20.80 per cent

were old (more than 50 years).

Mann (2015) studied on awareness and perception of dairy farmers towards cattle insurance in Punjab and reported that 57 per cent of the respondents were 20-40 years of age, 42 per cent respondents were 41-60 years of age and only 1 per cent of the respondents were above 60 years of age.

Kumar (2016) in his Impact study on LI in Mathura district reported 35 per cent of the respondents were young aged (< 35 years), 42 per cent middle aged (35-50 years) and 23 per cent old, aged group (> 50 years).

Mohapatra *et al.* (2016) in their study on farmers knowledge about the agricultural insurance scheme in Punjab noted that 28 per cent of the LI adopter respondents were young (25-38 years) aged, 56 per cent were middle (38-42) aged,16 per cent were old (42-61) aged.

Subhash *et al.* (2016) studied the status and determinants of livestock insurance in India, particularly in states of Haryana and Rajasthan, and reported that, age had a positive impact on the farmers' decision to adopt LI. Average age of the farmer who insured their animals was 50 years and that of non- insured was 49.6 years.

Singh and Hlophe (2017) studied the factors affecting the adoption of LI among the livestock farmers in Manzini Region, Swaziland and among the respondent farmers selected for study majority (38%) were 55 years and above of age, followed by 36 per cent, 45-54 years of age, 22 per cent, 35-44 years of age, and 4 per cent of the respondent belonged to 25-34 years age group. After the study the results were exactly opposite to their expectation that the older farmers adopted no or

low insurance as they relayed on their experience.

Kandel (2019) in his study on farmers' awareness and perception about livestock insurance in Nawalparasi district of Nepal noted that the insured respondent farmers had an average age of 40.10 years whereas that of the non-insured was 43.32 years.

Nepali (2021) studied farmers perception on status of livestock insurance in Surkhet district, Nepal and reported that the age group less than 25 years was supposed to be studying or engaged in other occupations. About 46.67 per cent of the middle-aged group was more focused to new agricultural products like insurance rather than old, aged farmers (17.78%).

Devkota (2021) in a study on determinants of livestock insurance adoption in Nepal, observed that age had no influence on LI adoption as the average age of respondent adopters and non-adopters was 45 years.

2.2.2 Sex

Babalola (2014) conducted a study on determinants of adoption of agricultural insurance of poultry farmers in Abeokuta Metropolis of Ogun state in Nigeria and revealed that majority of the respondents selected for the study were males which reflected the livestock enterprise was labour-oriented mainly involved male who was also the head of the family.

Kumar (2016) in his study on impact of LI in Mathura district reported that 95 per cent of the respondents were males and remaining five per cent were females.

Subhash *et al.* (2016) studied the status and determinants of livestock insurance in India and reported that though the female headed households were very less (10 per cent) they were placed better in terms of their decisions to purchase LI products for the animals.

Singh and Hlophe (2017) studied the factors affecting the adoption of LI among the livestock farmers in Manzini Region, Swaziland and observed that out of the total respondents selected for the study 94 per cent were male and the remaining six per cent were female.

Kandel (2019) in his study on farmers' awareness and perception about livestock insurance in Nawalparasi district of Nepal, noted that, 92.5 per cent of the insured respondent farmers were male and remaining 7.5 per cent were female. Whereas 97.5 per cent of the non-insured respondent farmers were male and remaining 2.5 per cent were female.

Singh *et al.* (2019) in their study on profile of dairy animals covered and farmers adopted LI in Karnal district of Haryana, reported that, out of the total respondents taken for study, 88 per cent were male and remaining 12 per cent were female, who adopted LI for their animals. Proportion of female LI adopters among different herd sizes was more (5.33 %) in the small category.

Devkota *et al.* (2021) in their study on determinants of livestock insurance adoption in Nepal, observed that 84 per cent of the LI adopters and 65 per cent of LI non-adopters were males and the remaining respondents were females.

Nepali (2021) studied farmers perception on status of livestock insurance in Surkhet district and reported that, out of the total respondent farmers, 53.33 per cent

were females, remaining 46.67 per cent were males. Both genders participated equally in LI.

2.2.3 Education

Khan *et al.* (2013) in their study on analysing the willingness to pay for cattle and buffalo insurance which was conducted for dairy farmers in central India revealed that 19.2 per cent of the respondents were illiterate, 15.8 per cent could able to read and write, 22.5 per cent of respondents completed primary education and 22.5 per cent of the respondent's completed middle schooling and 20 per cent finished their high school and above education.

Khan *et al.* (2013) analysed the dairy farmers in central India on willingness to pay for cattle and buffalo insurance and reported that education and information source showed positive and significant relationship at 1 per cent level of significance towards LI. It was found that the low level of education of many dairy farmers had negatively influenced the decision to purchase livestock insurance.

Mann (2015) studied on awareness and perception of dairy farmers towards cattle insurance in Punjab and reported that 1 per cent of the respondents had education of below matriculation, 22 per cent matriculation, 33 per cent PUC, 35 per cent completed graduation and 9 per cent completed post-graduation.

Kumar (2016) in his study on impact study on LI in Mathura district, reported that 26 per cent of the respondents were illiterates, 8 per cent had primary education, 15 per cent middle schooling, 28 per cent secondary schooling, 14 per cent higher secondary and 9 per cent graduation and above.

Mohapatra *et al.* (2016) in their study on farmers knowledge about the agricultural insurance scheme in Punjab noted that 5 per cent of the LI adopter respondents were illiterate, 36 per cent had primary education, 55 per cent of respondents completed middle schooling and 4 per cent of the respondent's completed matriculation.

Subhash *et al.* (2016) studied on status and determinants of livestock insurance in India and reported that the education positively and significantly affected the farmers decision to adopt LI. Higher education generated more awareness and reflected better understanding of the situation and motivated uptake of LI. About 50.40 per cent of the insured respondents were illiterates, 8 per cent respondents had primary education, 16.70 per cent completed their secondary education, 15.90 per cent of the insured respondents finished senior secondary education and 9 per cent of the insured respondents were among above senior secondary education holders. Further, 53 per cent of the non-insured respondents were illiterates, 8.8 per cent had primary education, 19.80 per cent completed their secondary education, 12.60 per cent of the insured respondents finished senior secondary education and 5.80 per cent of the insured respondents were among above senior secondary education holders.

Duhan and Singh (2017) studied on factors affecting awareness level of farmers about crop insurance in Haryana and found that education of 29.70 per cent of the respondent was below metric, 35 per cent studied metric, 19.40 per cent up to senior secondary, 11.60 per cent graduation and 4.30 per cent of the respondent farmers completed post-graduation.

Singh and Hlophe (2017) studied on factors affecting the adoption of LI among the livestock farmers in Manzini Region, Swaziland and opined that, the probability of purchasing LI decreases as the level of formal education of the farmer increases.

Kandel (2019) in his study on farmers' awareness and perception about livestock insurance in Nawalparasi district of Nepal and noted that 7.50 per cent of the insured respondents were illiterates, 22.50 per cent completed primary schooling, 65 per cent completed their secondary education, 5 per cent of the insured respondents finished education at college or university level. Whereas, 27.5 per cent of the non-insured respondents were illiterates, 22.50 per cent completed primary schooling, 45 per cent completed their secondary education, 5 per cent of the non-insured respondents finished education at college or university level.

Singh and Chandel (2019) studied on factors influencing in adoption of livestock insurance with special reference to Haryana and stated that mean values of education level was substantially higher for the farmers adopted LI.

Singh *et al.* (2019) in their study on profile of dairy animals covered and farmers adopted LI in Karnal district of Haryana and found that overall, 20 per cent of the respondent household head were illiterate, 14.70 per cent studied up to primary level, 12 per cent up to upper primary level, 10.70 per cent up to secondary level, 33 per cent up to higher secondary level and only 9.30 per cent were found educated up to graduation or above level. This revealed that the highest proportion of dairy farmers who adopted livestock insurance was having education up to higher secondary level.

Devkota *et al.* (2021) in a study on determinants of livestock insurance adoption in Nepal, observed that, the average years of schooling for both insured and non-insured were almost equal.

Kumar *et al.* (2021) in their study on constraints experienced in adoption of livestock insurance by dairy farmers of Mathura district of Uttar Pradesh, stated that education and information source showed positive and significant relationship at 1 per cent level of significance. Education provides an important angle which influence individuals' innovation adoption process.

Nepali (2021) studied farmers perception on status of livestock insurance in Surkhet district, Nepal and reported that more farmers with higher education adopted LI compared to farmers with no or little education. 11.11 per cent of the insured respondents were illiterates, 13.33 per cent respondents had primary education, 22.22 per cent completed their secondary education, 17.78 per cent of the insured respondents finished higher secondary education. Whereas 4.45 per cent of the non-insured respondents were illiterates, 17.78 per cent respondents had primary education, 8.89 per cent completed their secondary education and only 4.44 per cent of the non-insured respondents finished higher secondary education.

2.2.4 Family type

Kumar (2016) in his study on impact study on LI in Mathura district reported that 70 per cent of the respondents belonged to nuclear family and remaining 30 per cent belonged to joint family.

Nepali (2021) studied on farmers perception on status of livestock insurance in Surkhet district, reported that farmers from joint family adopted more

(37%) insurance than nuclear family (26.67%).

2.2.5 Family size

Mohammed and Ortmann (2005) studied factors influencing adoption of livestock insurance by commercial dairy farmers in three zobatat of Eritrea and revealed that positive signs attached to the estimated coefficients of the variable family size indicate that the greater the value of family size the higher was the tendency of the family to participate in LI.

Kumar (2016) in his impact study on LI in Mathura district reported that 19 per cent of the respondents were small (< 4) size family holders, 46 per cent were medium (4-6) and 35 per cent were large (> 7) size families.

Subhash *et al.* (2016) studied the status and determinants of livestock insurance in India and reported that the family size influenced positively on payment of LI premium. Bigger the family size, more was the probability of premium payment.

Kandel (2019) studied on farmers awareness and perception about LI in Nawalparasi district of Nepal and reported that, the average family size of the respondent LI adopters was found to be 5.22 and for LI non-adopters was 5.32 which was found to be greater than national average (4.88) and district average (5.00).

Nepali (2021) studied on farmers perception on status of livestock insurance in Surkhet district, reported that average household size of respondent farmers was 5.4.

2.2.6 Occupation

Ugwumbu *et al.* (2010) in their study on integrate farming systems and its effects on farm cash income in Awka south Agricultural Zone of Anambra State and reported that the farmers in their study area were having high farming experience which might have contributed to their proficiency in adopting technologies and alternative risk management tools.

Khan *et al.* (2013) in their study on analysing the willingness to pay for cattle and buffalo insurance which was conducted for dairy farmers in central India revealed that, 85.50 per cent of the respondent farmers occupation was agriculture and dairying and 14.20 per cent of the farmers were dependent on other works.

Mann (2015) studied on awareness and perception of dairy farmers towards cattle insurance in Punjab and reported that 49 per cent of the respondents were dependent on livestock income only and the remaining 51 per cent of the respondents depended on mixed farming (dairy and agriculture).

Kumar (2016) studied on Impact of LI in Mathura district, reported that 77 per cent of the respondents were depending on agriculture, 11 per cent livestock rearing, 8 per cent services, 3 per cent microenterprise and 1 per cent other activity as their primary occupation. Whereas 4 per cent of the respondents were depending on agriculture, 85 per cent livestock rearing, 8 per cent labour, 1 per cent microenterprise and 2 per cent other activity as their sub-occupation.

Subhash *et al.* (2016) studied the status and determinants of livestock insurance in India and reported that 27.10 per cent of the insured respondents were having agriculture as the primary occupation, and 72.90 per cent were practicing

both agriculture and livestock rearing as primary occupation. 30.40 per cent of the non- insured respondents were having agriculture as the primary occupation, and 69.60 per cent of the non -insured were practicing both agriculture and livestock rearing as primary occupation.

Kaphle and bastakoti (2017) in their study on Livestock insurance as a coping strategy against economic loss and food insecurity in rural communities of Nawalparasi district of Nepal and found that, more than 70 per cent households were dependent on agricultural activities for their livelihoods.

Kandel (2019) in his study on farmers' awareness and perception about livestock insurance in Nawalparasi district of Nepal noted that, 75 per cent of the insured respondent had their income from agriculture, 2.50 per cent by wage/ labour, 5 per cent by trade/ business, 7.50 per cent by service and 10 per cent by remittance. In case of non-insured 77.50 per cent of the respondent secured their income from agriculture, 2.50 per cent by trade/business, 7.50 per cent by service and 12.50 per cent by remittance.

Singh *et al.* (2019) in their study on profile of dairy animals covered and farmers adopted livestock insurance in Karnal district of Haryana and reported that with the main occupation of animal husbandry about 60 per cent of the farmers adopted LI which showed the relevance of insurance in protecting the main source of income.

Nepali (2021) studied on farmers perception on status of livestock insurance in Surkhet district, Nepal and reported that nearly 58 per cent of the LI adopters practiced income diversification with agriculture, business, service, labour, and remittance. The main source of income was agriculture and livestock.

2.2.7 Land holding

Mohammed and Ortmann (2005) studied on the factors influencing adoption of livestock insurance by commercial dairy farmers in three zobatat of Eritrea and revealed that greater the values of farm size, higher the tendency of farmers to participate in livestock insurance.

Khan *et al.* (2013) analysed the dairy farmers in central India on willingness to pay for cattle and buffalo insurance, and reported that 3.30 per cent of the respondents were landless, 50.80 per cent were marginal (< 2 hectares), 40.80 per cent small (2-4 hectares), 5 per cent large (> 4 hectares) farmers. Land holding showed positive and significant relationship at 5 per cent level of significance.

Mann (2015) studied on awareness and perception of dairy farmers towards cattle insurance in Punjab and reported that, out of 51 land holding respondents 6 were marginal (< 1 hectare of land) farmers,14 were small (1-2 hectare) farmers, 11 were semi medium (2-4 hectare) and 10 each were medium (4-10 hectare) and large (> 10 hectare) farmers.

Kumar (2016) studied impact of LI in Mathura district, reported that, 32 per cent of the respondents were landless, 37 per cent were marginal (<1 hectare), 25 per cent small (1-2 ha), 3 per cent semi medium (2-4 ha), 2 per cent medium (4-10 ha), 1 per cent large (>10ha) land holding farmers.

Mohapatra *et al.* (2016) in their study on farmers knowledge about the agricultural insurance scheme in Punjab noted that, 1 per cent of the respondents were marginal (<2.5 acres) farmers, 13 per cent small (2.5-5 acres), 51 per cent semi medium (5-10 acres), 46 per cent medium (10-25 acres) farmers.

Subhash *et al.* (2016) studied the status and determinants of livestock insurance in India and reported that the average land holding for the respondent insured and non- insured respondent farmers was 3.1. Land size had negatively influenced the farmers level of premium payment and LI adoption.

Singh and Hlophe (2017) studied the factors affecting the adoption of LI among the livestock farmers in Manzini Region, Swaziland and observed that the chance of adoption of livestock insurance increased with increase in farm size. This result was in contrary to the expected priori as an increase in farm size increased the probability that one chosen to insure.

Singh and Chandel (2019) studied on factors influencing in adoption of livestock insurance with special reference to Haryana and stated that farm size had negative effect on adoption of LI among the respondent farmers.

Kumar *et al.* (2021) in their study on constraints experienced in adoption of livestock insurance by dairy farmers of Mathura district of Uttar Pradesh stated that land holding showed positive and significant relationship at 5 per cent level of significance.

2.2.8 Experience in Livestock rearing

Khan *et al.* (2013) analysed the dairy farmers in central India on willingness to pay for cattle and buffalo insurance have reported that 13.30 per cent of the respondents were having below 6 years of livestock rearing experience, 42.50 per cent had 6-12 years, 32.5 per cent 12-18 years and 11.70 per cent of the respondent farmers had more than 18 years of livestock rearing experience. The experience in livestock rearing showed positive and significant relationship at 1 per cent level of significance towards LI.

Mann (2015) studied on awareness and perception of dairy farmers towards cattle insurance in Punjab and reported that 21 per cent of the selected respondents had 5-10 years of the experience in dairy farming, 33 per cent respondents had 11-15 years and 46 per cent of the respondents had more than 16 years of experience in dairy farming.

Kumar (2016) studied on impact of LI in Mathura district reported that 11 per cent of the respondents were having low (<18 years) livestock rearing experience, 38 per cent had medium (19-29 years) and 51 per cent were having high (>29 years) livestock rearing experience.

Subhash *et al.* (2016) studied the status and determinants of livestock insurance in India and reported that, livestock farming experience had significant negative influence on adoption of LI. Average farming experience in insured and non-insured farmers was 41.9 years.

Singh and Hlophe (2017) studied the factors affecting the adoption of LI among the livestock farmers in Manzini Region, Swaziland and opined that the probability of purchasing LI decreases as the experience of livestock farming increase.

Singh and Chandel (2019) studied on factors influencing in adoption of livestock insurance with special reference to Haryana and stated that experience in dairying had negative effect on adoption of LI among the respondent farmers. One year experience decreased the odds ratio by 8.60 per cent and probability by 1.40 per cent.

Singh *et al.* (2019) in their study on profile of dairy animals covered and farmers adopted LI in Karnal district of Haryana and opined that majority of the farmers (60 %) were having the dairy farming experience between fifteen to thirty years. It was found that the farmers having more experience in dairying were more likely to be willing to pay for LI insurance.

Kumar *et al.* (2021) in their study on constraints experienced in adoption of livestock insurance by dairy farmers in Mathura district of Uttar Pradesh stated that experience in livestock rearing resulted in positive and significant relationship at 5 per cent level of significance.

Nepali (2021) studied on farmers perception on status of livestock insurance in Surkhet district, Nepal and reported that 35.56 per cent of the insured respondents had the below 10 years livestock farming experience, 20 per cent had 10-25 years of experience and only 8.89 per cent had above 25 years of experience. While in non-insured respondents 17.78 per cent had below 10 years of experience,13.33 per cent had 10-25 years, only 4.44 per cent had more than 25 years of livestock farming experiences.

2.2.9 Livestock possession

Mann (2015) studied on awareness and perception of dairy farmers towards cattle insurance in Punjab and reported that 31 per cent of the respondents had small herd livestock 21 per cent medium herd size and remaining 48 per cent had large herd size. Out of the respondent farmers 18 per cent of the were rearing indigenous cows, 87 per cent cross breed cows and 60 per cent had buffaloes.

Kumar (2016) in his study on impact study on LI in Mathura district reported that 24 per cent of the respondent farmers had small herd size (< 2 animals), 47 per cent had medium (3-4 livestock) and 29 per cent had large herd size (> 4).

Subhash *et al.* (2016) studied the status and determinants of livestock insurance in India and reported that the average herd size for the respondent insured farmers was 3.9 whereas herd size for the non- insured respondent farmers was 5.3. Herd size had negative effect on adoption of LI as the farmers with larger herd size were relatively less vulnerable and had better risk absorption capacity.

Singh and Chandel (2019) studied the factors influencing in adoption of livestock insurance with special reference to Haryana and stated that, mean values of herd size was considerably higher for the farmers adopted LI. It revealed that raise in herd size and high yielding animals in the herd would motivate the farmers to go for the adoption of LI.

Singh *et al.* (2019) in their study on profile of dairy animals covered and farmers adopted LI in Karnal district of Haryana and reported that majority of the herd size of the respondent farmers were either large (6-20 Standard Animal Units - SAU, 44 %) or small (1-3 SAUs ,38.67 %) and the medium herd size (4-5 SAUs) was only 17.33 per cent. On an average 3 to 4 animals were insured per large herd whereas 1to 2 per small herd and 2 per medium herd were insured. Of the average herd sizes two third (67%) of the animals from small herd and only 25 per cent of the animals were insured from the large herd holding farmers. It implies that small farmers had insured maximum number of their total animals than the large farmers to combat the risks arising due to death of animal.

Devkota *et al.* (2021) in a study on determinants of livestock insurance adoption in Nepal, observed that maintaining improved breeds would increase the adoption of LI by 37 per cent than those with local breeds, as improved breeds require high investment and have higher mortality than the local breeds. Crossbreed holders had higher income due to higher productivity and making it affordable for the farmer to pay premium amount.

2.2.10 Animal procurement

Thomas *et al.* (2004) in their study on the constraints and potential of livestock insurance schemes in Vietnam reported that farmers deciding to use credit to purchase livestock face two risks at once, and both severely endanger their livelihood: (1) the risk of losing the livestock asset, and (2) failure of their investment.

Mishra (2014) in his study on Livestock insurance: Still a distant dream for tribal communities of Koraput tract in Odisha, stated that farmers procured livestock mostly through their personal savings accumulated over a period of time instead of taking credit from money lenders or financial institutions. In case of 89 per cent households, the women farmers purchased poultry birds and small ruminants such as sheep and goats using their personal savings. Therefore, livestock insurance received less attention in comparison to crop insurance in tribal communities.

2.2.11 Family annual income

Otieno *et al.* (2006) studied on risk management in small- holder cattle farming: A hypothetical insurance approach in Western Kenya and reported that, the higher the income from livestock the greater was the chance of adoption.

Mann (2015) studied on awareness and perception of dairy farmers towards cattle insurance in Punjab and reported that 15 per cent of the respondents were having below 1 lakh income per annum, 29 per cent 1 to 3 lakh per annum, 14 per cent had 3 to 5 lakh per annum and 2 per cent above 5 lakh per annum.

Kumar (2016) in his impact study on LI in Mathura district reported that, 3 per cent of the respondents were having low (Rs <71,999) income, 57 per cent medium (Rs 72,000- 2,21,512) and 40 per cent high (Rs >2,21,512) income.

Subhash *et al.* (2016) studied the status and determinants of livestock insurance in India and reported that that the average family income for the respondent insured farmers was Rs 1,18,738 per annum, whereas for the non-insured respondent farmers was Rs 1,11,403 per annum. The household income showed significant negative influence on the adoption of LI. This might be attributed to the fact that farmers with higher income were relatively less vulnerable and would have better risk absorption capacity, therefore not interested in insuring their animals.

Duhan and Singh (2017) studied on factors affecting awareness level of farmers about CI in Haryana and found that the income group up to 1 lac,1-2 lac, 2-3 lac, 3-4 lac, above 5 lacs had awareness level of 1.86, 2.82, 3.62, 3.57, 3.36 and 4.64 respectively. Large farmers with highest income of more than 5 lakh were having more awareness level and conscious about their agricultural risks and could spend money for risk mitigation.

Singh *et al.* (2019) in their study on profile of dairy animals covered and farmers adopted livestock insurance in Karnal district of Haryana, and it was evident

that they had share of 0.43 livestock income in the Gross income (livestock plus agriculture income). Of different herd sizes, this ratio was above 0.40 which showed that more than 40 per cent of the income in a household was coming from livestock only.

Devkota *et al.* (2021) in a study on determinants of livestock insurance adoption in Nepal, observed that maintaining improved breeds would increase the adoption of LI by 37 per cent than those with local breeds as improved breeds would require high investment and had higher mortality than the local breeds. Crossbreed holders had higher income due to higher productivity and making it affordable for the farmer to pay premium amount.

2.2.12 Social participation

Mahul and Stutley (2010) studied the Government support to agricultural insurance: Challenges and options for developing countries and reported that social participation in any of the groups would increase the probability of LI adoption.

Kumar *et al.* (2011) in their study on an analysis of farmer's perception and awareness towards crop insurance as a tool for risk management in Tamil Nadu and stated that if a respondent is member of any groups or cooperatives the probability of LI adoption is more.

Mann (2015) studied on awareness and perception of dairy farmers towards cattle insurance in Punjab and reported that 48 per cent of the respondents were members of various dairy association and the remaining 52 per cent of the respondents were not the members of any dairy association.

Mohapatra *et al.* (2016) in their study on farmers knowledge about the agricultural insurance scheme in Punjab, noted that, 46 per cent LI adopter respondents were having low (9-13) social participation, 52 per cent had medium (13-16) and 2 per cent had high (16-25) social participation.

Ghimire *et al.* (2016) in their study on agricultural insurance issues and factors affecting adoption of banana growers in Nepal and stated that social participation in any of the groups would increase the probability of LI adoption.

Kandel and Timilsina (2018) studied on factors affecting the adoption of livestock insurance by dairy farmers in Nawalparasi district and stated that the result of the binary logistic regression analysis showed holding membership by the farmers positively affected the LI.

Singh and Chandel (2019) conducted study on factors influencing in adoption of livestock insurance with special reference to Haryana and observed the social participation to be statistically non-significant and considered to be not influencing the adoption of livestock insurance.

Devkota *et al.* (2021) in a study on determinants of livestock insurance adoption in Nepal, observed that, most of the LI farmers (95%) and less than half of the LI non- adopters had membership in different groups/cooperatives. The regression results revealed that if a respondent is member of groups or cooperatives the probability of LI adoption is increased by 54per cent.

2.3 AWARENESS LEVEL AND ADOPTION OF LIVESTOCK INSURANCE

2.3.1 Information seeking behaviour of farmers

2.3.1.1 Extension participation

Mann (2015) from his study on the awareness and perception of dairy farmers towards cattle insurance in Punjab, reported that 80 per cent of the insured respondents attended the training sessions or awareness camps and the remaining 20 per cent neither attended training nor camps. Most of the trainees belonged to rural villages.

Devkota *et al.* (2021) in a study on determinants of livestock insurance adoption in Nepal, observed that very few respondents (less than 10%) had received training on LI. Limited training has led to a knowledge gap among farmers on the critical importance of insurance.

Nepali (2021) studied on farmers perception on status of livestock insurance in Surkhet district, reported that several trainings were conducted by cooperatives, insurance companies and NGOs. Out of the total respondents 64 per cent were LI adopters and 36 per cent were non-adopters. Out of the total insured 67 per cent of the respondent got training and insured and 68 per cent of the non-insured got no training.

2.3.1.2 Extension contact

Mohapatra *et al.* (2016) in their study on farmers knowledge about the agricultural insurance scheme in Punjab noted that 3 per cent LI adopters' respondents were having low (0-6) extension contact, 55 per cent had medium (6-7) and 42 per cent had high (7-8) extension contact.

Kandel and Timilsina (2018) studied factors affecting the adoption of livestock insurance by dairy farmers in Nawalparasi district and observed that extension contact of farmers affect positively for the adoption of LI.

Kandel (2019) studied on farmers awareness and perception about LI in Nawalparasi district of Nepal and reported that 57.5 per cent of the insured respondent had the access to extension contact whereas only 12.5 per cent of the non-insured respondent farmers had extension contact. Regular touch with extension contacts adopted more LI than with lesser extension contact.

2.3.1.3 Sources of information about livestock insurance

Kumar *et al.* (2011) in their study on analysis of farmer's perception and awareness towards crop insurance as a tool for risk management in Tamil Nadu found that the Government offices were the major source of information on LI. Majority of awareness passed to farmers by Government offices.

Khan *et al.* (2013) analysed the dairy farmers in central India on willingness to pay for cattle and buffalo insurance and reported that information source showed positive and significant relationship at 1 per cent level of significance towards LI.

Mann (2015) from his study on the awareness and perception of dairy farmers towards cattle insurance in Punjab, reported that the source of awareness for 35 per cent of the farmers were their friends, 33 per cent of farmers had awareness from other sources like banks, bank manager, animal health camps, 15 per cent of the respondents agreed that they came to know about insurance from insurance agent, 13 per cent from relatives and 4 per cent from veterinary doctor.

Basunathe and Tripathi (2017) conducted study on ICT using behaviour and perceived information needs of the livestock farmers in aAQUA and Warna Wired Village ICT Projects in Maharashtra and reported that majority of the respondents (82.67%) felt information on insurance, agencies, and insurance schemes for livestock in aAQUA as 'most appropriate' need.

Kumar *et al.* (2017) studied on factors affecting adoption and level of satisfaction among dairy owners towards livestock insurance and distributed the dairy farmers based on the information seeking behaviour as personal localities sources, personal cosmopolite source and impersonal cosmopolite sources and found that they had very low information of 51 per cent, 94 per cent and 85 per cent in all three categories respectively. Practice of traditional system dairy farming, personal localities sources as major source of information were the reasons for low uptake of LI. It was observed that only 23 per cent, 06 per cent and 15 per cent of farmers were found in high category on information respectively. Information source showed positive and significant relationship at 1 per cent level of significance. Information sharing from different sources like members from peer group, family, friends, and others provide an important input which motivates individuals' innovation adoption process.

Singh and Hlophe (2017) in their study on factors affecting adoption of livestock insurance of among livestock farmers in Manzini Region of Swaziland stated that about 48 per cent of the respondent farmers got the LI awareness from media, 30 per cent from friends and peer farmers and 12 per cent from extension worker.

Timsina *et al.* (2018) in their study on whether program linking with insurance makes agriculture insurance sustainable found that the government-sponsored agricultural programs like Youth Focused Program were compulsorily linked with agricultural insurance and farmers joined insurance to receive grants or support. Irrespective of the awareness the insurance was availed due to linkage in schemes.

Kandel (2019) studied on farmers awareness and perception about livestock insurance in Nawalparasi district of Nepal and stated that the LI adopted farmers acquired the awareness of LI from TV (80%), financial institutions (50 %), neighbour (47.5 %), radio (42.5 %), agrovets and insurance company agents (40 %) each. In case of LI non-adopters' knowledge was shared from financial institutes (70 %) followed by TV (66 %), neighbour farmers (56.67 %), agrovets (46.66 %).

Singh and Chandel (2019) in their study on factors influencing in adoption of livestock insurance with special reference to Haryana stated that information source showed positive and significant relationship at 1 per cent level of significance towards LI.

Devkota *et al.* (2021) in a study on determinants of livestock insurance adoption in Nepal, observed that about 53 per cent of the respondent farmers got the LI awareness from government officers, 20 per cent of the insured farmers had adopted LI due to mandatory provision.

Nepali (2021) studied on farmers perception on status of livestock insurance in Surkhet district, reported that when the farmers availed the loans from cooperative, LI was made mandatory and about 42.22 per cent of the farmers got awareness of LI from cooperatives,15.56 per cent from friends and family

members/relatives, radio, TV, newspapers were other source of information.

2.3.2 Awareness level on livestock insurance

Augustine *et al.* (2010) conducted study on effects of level of awareness of Pig rearers about Swine Flu on market prices of Pigs in Mubi Zone in Nigeria and stated that the probability of insurance adoption increases with the increase in awareness about the insurance.

Aina and Omonona (2012) studied on Nigerian Agricultural Insurance Scheme (NAIS) its prospects, achievements and problems and reported that the probability of insurance adoption increases with the increase in awareness about the insurance.

Goudappa *et al.* (2012) worked on farmers perception and awareness about crop insurance in Karnataka and found that 82 per cent of the respondents were not aware of LI due to lack of knowledge about the benefits of livestock insurance.

Khan *et al.* (2013) analysed the dairy farmers in central India on willingness to pay for cattle and buffalo insurance and reported that lack of awareness and literacy problem were the major constraints among livestock owners to adopt LI.

Babalola (2014) conducted study on determinants of farmers' adoption of agricultural insurance of poultry farmers in Abeokuta Metropolis of Ogun state in Nigeria and expressed that the probability of insurance adoption increases with the increase in awareness about the insurance.

Mann (2015) from his study on the awareness and perception of dairy

farmers towards cattle insurance in Punjab, reported that farmers were fully aware of LI as the selected respondents were only the LI adopters. All the respondent farmers were having the awareness of Livestock Insurance.

Mohapatra *et al.* (2016) studied farmers knowledge on agricultural insurance in Punjab state and reported that about 38.00 per cent of the farmers had medium level of knowledge about the livestock insurance scheme. Whereas, equal percentage (31.00) of the farmers had low and high level of knowledge.

Singh and Hlophe (2017) studied the factors affecting the adoption of LI among the livestock farmers in Manzini Region, Swaziland and stated that more than 88 per cent of the respondent farmers were aware of LI but not had enough knowledge to decide the adoption of LI policy. The results of study also revealed that the demand for livestock insurance in Manzini region was positively influenced by the level of awareness of a farmer.

Kandel and Timilsina (2018) studied factors affecting the adoption of livestock insurance by dairy farmers in in Nawalparasi district and observed that lack of awareness about insurance subsidy scheme was prime constraint for insurance adoption.

Kandel (2019) studied on farmers awareness and perception about LI in Nawalparasi district of Nepal and reported that all the respondent LI adopters were aware of LI and majority of (75%) knew in non-adopters. Majority (82.50%) were aware of insurance procedure and premium subsidy schemes among the LI adopters and only 32.50 per cent among the non-adopters.

Minhaj *et al.* (2018) studied on constraints perceived by dairy farmers in the adoption of improved animal husbandry practices in Doda district and reported knowledge as a constraint among the farmers. LI would boost when efforts were made in the direction of information dissemination and knowledge enhancement.

Nair *et al.* (2020) in their study on evaluating the efficacy of an app-based livestock insurance scheme in Gujarat reported that additional challenge was in studying the awareness of LI among the farmers as 90 per cent of the LI were credit linked product.

Devkota *et al.* (2021) in a study on determinants of livestock insurance adoption in Nepal, observed that awareness about LI would boost its adoption by 74 per cent. The probability of adoption is directly proportional to the awareness of LI.

Nepali (2021) studied on farmers perception on status of livestock insurance in Surkhet district, reported that almost all (99.78%) of the livestock owners were aware that livestock may be insured but many were found to have incomplete knowledge on it. 77.78 per cent were aware that regular payment of premium should be made to continue LI and to whom to contact for getting claim amount. Half (51.11%) the respondents were not aware of the livestock insurance coverage. Farmers did not study their insurance policy thoroughly i.e., its coverage, policy period, claim amount to be obtained and the procedure etc.

2.3.3 Adoption of livestock insurance

2.3.3.1 Factors influencing the adoption of livestock insurance

Meuwissen *et al.* 2001 conducted empirical analysis of Dutch livestock farmers on risk and risk management and revealed that animal price and production risks as important source of risks and reason for adoption of LI.

Trivedi and Soni (2014) conducted study on Cattle Insurance in Villages of Gandhinagar district and revealed that motivation by Village Cooperative Society (VCS) was the prime factor for availing livestock insurance as a bundled product with cattle loan throughout the year and was sold on partner-agent model and that too from a single company with whom VCS had a close tie-up.

Mann (2015) from his study on the awareness and perception of dairy farmers towards cattle insurance in Punjab, reported that the 62 per cent of the respondents insured their animals by realizing the importance of LI, 31 per cent of the respondent insured their animals to reduce the risk of death of animal due to diseases, fatality, etc., and only 7 per cent of the farmers insured just to obtain subsidy amount from government sponsored schemes. Further, farmers insured only part of their available animals due to huge premium amount, replacement, or sale of some of their animals due to less productive, poor health, defectiveness etc.

Ghimire *et al.* (2016) studied on Agriculture Insurance in Nepal: Case of Banana and Livestock Insurance and opined that various types of diseases were major problems for farmers and motivated them to go for LI.

Jokhio *et al.* (2016) studied on the role of insurance companies in managing risk in livestock farming and noted that one of the factors related to low insurance

adoption is an insurance agent's failure to approach farmers to explain the policies.

Subhash *et al.* (2016) studied the status and determinants of livestock insurance in India and reported that average yield and having buffalo significantly influence on payment of premium of LI. Higher the milk yield and higher the level of LI adoption.

Sahu (2017) studied on Economic analysis of Livestock insurance scheme as a risk management tool in Bhanjanagar subdivision of Ganjam district in Odisha and reported that livestock diseases, death and mastitis were the major risks encountered in the farms which led to adoption of LI among the farmers.

Kumar *et al.* (2018) in their study on factors influencing the adoption of LI revealed that personal factor affecting the adoption of livestock insurance was motivation mainly by friends and community members (98 weighted mean), followed by high probability of diseases occurrence in particular area (97.5), satisfactory response received from insurance agencies (97), effective risk assessment and livestock insurance provides protection to dairy farming (94), high purchase cost of animal (93), LI acts as personal saving (92), past experiences in dairying (91.5), LI reduces personal financial stress, high treatment cost of cross breed animals were ranked first to ninth respectively.

Koirala and Bhandari (2018) studied on LI a tool to reduce economical loss of farmers from climate change related hazards and pointed out 62 per cent of the people felt climate change related hazards on animals and taken up LI as major mitigation strategies.

Nepali (2021) studied on farmers perception on status of livestock insurance in Surkhet district, reported that major reasons for adoption of LI were mortality of animal (75.55 %), production loss (64.44 %), high cost of animal (68.69 %) and price risk (66.66 %). Various diseases and mastitis were the major concern for farmers (44.44 %) which mostly occur in goats and crossbreed cows rather than local cows and buffaloes.

2.3.3.2 Number of livestock insured

Koirala and Bhandari (2018) in their study on livestock insurance in Nepal, reported that 47 per cent of the respondent farmers insured their animals in Kaski, 33 per cent in Jhapa and 20 per cent in Dolakha districts.

Singh *et al.* (2019) in their study on profile of dairy animals covered and farmers adopted livestock insurance in Karnal district, reported that majority (87 %) of the respondent farmers insured only two animals. Out of the total 75 sampled households, 65 households insured two animals as benefit of subsidy was provided to maximum of two animals per family.

Nepali (2021) studied on farmers perception on status of livestock insurance in Surkhet district, Nepal and reported that only 64.44 per cent of total respondent farmers insured their livestock, 22.28 per cent of goats, 17.48 per cent of buffaloes, 7.89 per cent of cattle, 25 per cent of pigs were insured.

2.3.3.3 Reasons insuring livestock

Meuwissen *et al.* (2001) conducted empirical analysis of Dutch livestock farmers on risk and risk management and revealed that animal price and production risks as important source of risks and reason for adoption of LI.

Nepali (2021) studied on farmers perception on status of livestock insurance in Surkhet district, reported that majority of livestock farmers agreed insurance as an effective risk management tool and the major reasons for adoption of LI were mortality of animal (75.55 %), production loss (64.44 %), high cost of animal (68.69 %) and price risk (66.66 %). Various diseases and mastitis were the major concern for farmers (44.44 %) which mostly occur in goats and crossbreed cows rather than local cows and buffaloes.

2.3.3.4 Sources of livestock insurance

Choudhary and Srinivasan (2011) in their study on insurance schemes of government of India reported that the Government of Rajasthan started three insurance schemes namely Kamdhenu, Bhais Bima and Avika Kavach schemes against death of cows, buffaloes, and sheep respectively. Under livestock and sheep insurance, the coverage was less than 5 per cent. Under sheep insurance, about 4 lakhs of sheep were covered by the end of March 2009, which constituted less than 1 per cent (0.7 %) of the total sheep population of the country.

Mann (2015) from his study on the awareness and perception of dairy farmers towards cattle insurance in Punjab, reported that 54 per cent of the respondent purchased the insurance through government department schemes and 33 per cent by directly contacting insurance agent, 12 per cent through private bank agents and only 1 per cent by other means.

Rohith *et al.* (2019) from their analysis of the performance of cattle insurance in selected districts of Karnataka observed that number of animals insured were found to be higher under Group Cattle Insurance scheme (26278 to 37477) than

NLM scheme (970 to 7360) in Kolar district during 2015–18.

2.3.3.5 Renewal of livestock insurance

Subhash *et al.* (2016) studied the status and determinants of livestock insurance in India and reported that, out of the insured, only about 11 and 6 per cent of the households were reported to have renewed the livestock insurance in study areas of states of Haryana and Rajasthan respectively. In Haryana and Rajasthan, the extent of livestock cover was poor and further the renewal of insurance policies by policyholders was still poor.

Nepali (2021) studied on farmers perception on status of livestock insurance in Surkhet district, Nepal and reported that only 64.44 per cent of total respondent farmers insured their livestock, out of which only 37.93 per cent had renewed their insurance package. About 62.07 per cent respondent farmers insured for first time, 20.69 per cent had renewed once, while 17.24 per cent respondents had renewal status for more than one year.

2.3.3.6 Level of satisfaction among the Livestock farmers about livestock insurance

Trivedi and Soni (2014) studied cattle insurance in villages of Gandhinagar district and reported that farmers responded that the time taken for the claim settlement by the insurance company (1.5 to 2 months) was at satisfactory level but showed dissatisfaction on the amount of claim received. The insurance company lowered the burden of premium amount for the farmers by lowering the animal price, but unfortunately it proved to be disastrous in the event of the death of the cattle and its replacement with new cattle. Cattle owners expressed their willingness

to pay higher premium if they could receive satisfactory benefit at the time of settlement of the claim. Some respondents felt premium payment as waste of money, because if the death of the cattle did not occur during the policy period, then the premium paid was goes wasted.

Mann (2015) from his study on the awareness and perception of dairy farmers towards cattle insurance in Punjab, reported that 43 per cent of the insured expressed their satisfaction over existing premium rate but 57 per cent showed dissatisfaction over high premium. Majority of the respondent expressed satisfaction over the services rendered by the veterinary officers and claim settlement. Majority of them felt insurance procedure was tedious.

Kumar (2016) in his study on impact study on LI in Mathura district reported that more than half of the respondents were pleased with the insurance personnel attitude (57.4 weighted mean score), half of the respondents were satisfied with the indemnity period (50), satisfaction on the time of visit at the animal deceased spot was not encouraging (35.71), LI premium rate (28.57), policy terms and conditions, loss estimation at claim settlement, risks covered (each 14.29), speed of settlement (7.14).

Kandel and Timilsina (2018) studied factors affecting the adoption of livestock insurance by dairy farmers in Nawalparasi district and observed that farmers perceived that insurance procedure was easier but claim settlement procedure was tedious.

Kandel (2019) in their study on farmers' awareness and perception about livestock insurance in Nawalparasi district of Nepal reported that the people showed

satisfaction on premium amount and subsidy policy of the government (100 %) but had dissatisfaction over claim procedure and requirements (87.50 %) and quickness in paying payments (65 %).

Devkota *et al.* (2021) in a study on determinants of livestock insurance adoption in Nepal, observed that around 59 per cent of the insured farmers were satisfied with the valuation and loss assessment procedure for LI.

Nepali (2021) studied the farmers perception on status of livestock insurance in Surkhet district, reported that none of the livestock farmers were completely satisfied about insurance facilities. Present premium rate was found satisfactory (68.9 %), whereas they had complaints on the risk coverages (58.62 %).

2.3.3.7 Relationship between Socio economic and psychological characteristics of livestock farmers and adoption of livestock insurance

Mohammed and Ortmann (2005) studied factors influencing adoption of livestock insurance by commercial dairy farmers in three zobatat of Eritrea and reported that the probability of purchasing livestock insurance increases as the level of formal education of the farmer increases while, experience is negatively related.

Khan *et al.* (2013) in their study on willingness to pay for cattle and buffalo insurance: an analysis of dairy farmers in central India reported that as education level of farmers, landholding size, and dairy farming experience increase, the probability of willingness to pay for insurance also increases. As education level increases by one unit, the odds of willingness to pay increases by about 70 per cent. As landholding size increases by 1 ha, the odds of willing-ness to pay almost doubles. As dairy farming experience increases by 1 year, the odds of willingness to

pay increases by 30 per cent.

Singh and Hlophe (2017) studied on factors affecting the adoption of LI among the livestock farmers in Manzini Region, Swaziland reported that negative relationship exists between age, education, farm experience, premium price with the probability that a farmer adopting livestock insurance. Whereas, awareness and farm size had positive relationship with the probability that a farmer adopting livestock insurance.

Kumar *et al.* (2021) studied on the constraints experienced in adoption of livestock insurance by dairy farmers of Mathura district of Uttar Pradesh and reported that education and information source showed positive and significant relationship at 1 per cent level of significance whereas, land holding and experience in livestock rearing showed positive and significant relationship at 5 per cent level of significance.

2.4 CONSTRAINT ANALYSIS OF LIVESTOCK INSURANCE

Studies on the constraints in livestock insurance are categorised based upon the stakeholders and the stages in insurance procedures and presented in the headings below

2.4.1 Constraints in livestock insurance

2.4.1.1 Constraints faced by the farmers in the adoption of livestock insurance

Raju and Chand (2007) in their study on progress and problems in agriculture insurance stated that majority of the farmers in villages were not literate enough to understand the provisions of policy and with the procedures of LI and such farmers were facing difficulty in insuring their animals. So, they suggested that the insurance

product for rural areas should be simple in design and presentation which could be understood easily.

Birthal and Taneja (2012) opined that, LI in India was given premium subsidy restricted to maximum of two animals (cow or buffaloes) yielding 1500 litres of milk per lactation for maximum period of three years. The subsidized premium for three year was also too high for poor and were unable to take up LI.

Khan *et al.* (2013) in their analytical study on willingness to pay for cattle and buffalo insurance of dairy farmers in central India revealed majority (36 %) of respondents felt, no necessity of LI at all due to low awareness and 28 per cent of the respondent said that they would shift from risky livestock production system to less risky non- agricultural small and medium enterprises.

Cai and Song (2013) reported that low product knowledge and lack of awareness about insurance have resulted in low access, and low uptake of agricultural insurance products for low-income farmers.

Sundar and Ramakrishnan (2013) studied on farmers' awareness, perception and willing to join and pay for crop insurance and reported that lack of awareness, no need of insurance, delay in claim payments and complex documentation were the major reason for low uptake of LI.

Trivedi and Soni (2014) in their study on cattle insurance in villages of Gandhinagar district reported that higher insurance premium was the main hurdle followed by lack of delivery mechanism at doorstep for low uptake of LI.

Mann (2015) from his study on the awareness and perception of dairy farmers towards cattle insurance in Punjab, reported the reasons for not adopting LI such as it

was easy to get animal insured or it was tedious (mean score 4.78) followed by shifting of farmers from high risk dairying to low risk small and medium enterprise (mean score 4.11), voluminous paper work (mean score 4.04) in LI, lacking of transparency in LI (mean score 3.98), inadequate service by the insurance agency (mean score 3.89), high insurance premium (mean score 3.56) etc.

Chand *et al.* (2016) in their evidence-based study on status and determinants of livestock insurance in Haryana and Rajasthan and revealed that 82.25 per cent of the respondents in Haryana and 65.90 per cent in Rajasthan expressed high rates of insurance premium was major reason for low uptake of LI.

Ghimire *et al.* (2016) in their study on Agriculture Insurance in Nepal: Case of Banana and Livestock Insurance, reasoned out for not going for livestock insurance are the lack of faith in the scheme/agency (100%), lack of awareness (46.66 %), lack of premium paying capacity (20%), complex documentation (13.30 %) and delay in claim payment (6.70%).

Kandel and Timilsina (2018) studied factors affecting the adoption of livestock insurance by dairy farmers in in Nawalparasi district and reported that majority of the farmers (82.50%) were unaware of the different facilities of insurance policies, followed by inadequate publicity of scheme (67.35%), delay in claim settlement (45%) were the constraints for non-insured farmers in joining livestock insurance program.

Koirala and Bhandari (2018) in their study on LI a tool to reduce economical loss of farmers from climate change related hazards and reported that lack of awareness, unwillingness of the farmers due to complex process of insurance and

inadequate approaches of the insurance company in their area were main reasons for low uptake of LI.

Minhaj *et al.* (2018) conducted study on constraints perceived by dairy farmers in the adoption of improved animal husbandry practices in Doda district and revealed that less knowledge of livestock insurance among dairy farmers was the main constraint reported followed by least importance given for information dissemination.

Nahas *et al.* (2018) conduced study on factors that influence livestock insurance adoption by livestock farmers in Namibia and revealed that some people were unable to avail LI due to expensive premium and some people thought insurance was of least important.

Ajieh (2010) in his study on poultry farmers' response to agricultural insurance in Delta state, Nigeria and reported that inadequate knowledge on benefits of insurance and late payments of claims were the major reasons for not uptake of LI.

Singh and Chandel (2020) in their study on constraints faced by the dairy farmers and agencies involved in Livestock Insurance in Haryana, reported that the major constraint faced by the farmers with LI policy in general are insurance is not done based on the actual market value (I rank) followed by, difficulties in the transfer of the policy (II rank), lengthy and cumbersome insurance procedure (III rank). Constraints faced by the farmers in buying the LI policy include possibility of insuring only selected animals (I rank) followed by lengthy and cumbersome procedure (II rank) and ack of awareness about government subsidies (III rank).

Kumar *et al.* (2021) in their study on constraints experienced in adoption of LI by dairy farmers of Mathura district of Uttar Pradesh and revealed in three aspects like personal and institutional constraints. Unaware of LI (93%), inadequate information about LI uptake procedure (93%), inadequate coordination between different insurance stakeholders (91.50%) were the major personal constraints. Inadequate awareness campaign about LI by state Animal Husbandry Department (97 %) followed by non-inclusion of small ruminants in LI (95 %), few number of financial institutions providing LI (92.50 %) and complex procedure for applying LI (91.50 %) were the major institutional constraints.

Nepali (2021) studied on farmers' perception on status of livestock insurance in Surkhet district in Nepal and observed that the respondents that lack of awareness (69 %), inadequate information (62 %) and limited choices on livestock insurance products (53 %) were major constraints faced by livestock owners.

2.4.1.2 Constraints faced by farmers during claim settlement of livestock insurance

IRMA (2008) report on insurance schemes of Government of India stated in livestock insurance, though the guidelines of the scheme suggested to settle the claims within 15 days after the submission of documents, on average, about 50 per cent of the states take more than 15 days to settle the claims.

Khan *et al.* (2013) in their analytical study on willingness to pay for cattle and buffalo insurance of dairy farmers in central India reported that the reasons for non- adoption of livestock insurance were mainly related to problems in claims settlements.

Chand *et al.* (2016) studied the status and determinants of livestock insurance in states of Rajasthan and Haryana and reported that getting the claim was difficult for 92.40 per cent of the respondents of Haryana and for 95.20 per cent of the respondents in state of Rajasthan. This further affected on their renewal of policy and others in uptake of LI.

Koirala and Bhandari (2018) opined that, delay in the claim payment by the insurance company was the major reason for livestock farmers not insuring their livestock.

Singh and Chandel (2020) in their study on constraints faced by the dairy farmers and agencies involved in livestock insurance in Haryana, opined that, lengthy procedures in claim settlement was the major constraints perceived by the farmers who adopted livestock insurance followed by unsatisfied (short) risk indemnity period and less claim payment to the insured amount.

Kumar *et al.* (2021) in their study on constraints experienced in adoption of LI by dairy farmers of Mathura district of Uttar Pradesh figured out some post claim constraints faced by farmers such as unsatisfactory (less) payment of insurance claims being the major (98 weighted mean) followed by lengthy and time-consuming process (95), delay in claim payment (89.50), loss of ear tags (77) were the other constraints.

2.4.1.3 Constraints faced by the insurance providers during insuring livestock

Chizari *et al.* (2003) studied perceptions of rural livestock insurance among livestock producers and insurance specialists in Isfahan Province, Iran and reported that the major hurdle for the development of LI was identified as lack of equipment

and facilities for insurance personnel.

Khan *et al.* (2013) analysed the dairy farmers in central India on willingness to pay for cattle and buffalo insurance and stated that high transaction cost and service are the major constraints faced by insurance agency.

Sharma (2014) stated that the personal challenges faced by insurers in the sense that the burden of all risks are passed on to the insurer as ex-ante risk mitigation strategies in the form of vaccination, de- worming, etc. are not well in place.

Ghimire and Kumar (2014) reported that the insured animals are provided with free tagging and free livestock veterinary inspections during insuring the livestock.

Singh and Chandel (2020) in their study on constraints faced by the dairy farmers and agencies involved in livestock insurance in Haryana and reported that lack of information about farmers willingness to take up LI (I Rank), difficulties in arranging the required documents (II Rank), low awareness among the dairy farmers (III Rank), high operating cost (VII Rank), remoteness of area to be served (V Rank).

2.4.1.4 Constraints faced by the insurance providers in claim settlement

Singh and Chandel (2020) in their study on constraints faced by the dairy farmers and agencies involved in livestock insurance in Haryana reported that untimely submission of documents (I Rank) followed by non-adherence of dairy farmers to the rules and regulations of livestock insurance (II Rank), lack estimation of correct value of animal at time of insurance and claim (III Rank), lack of fool

proof system of identification/ fraud claims (IV Rank), shortage of insurance agents to attend the cases of insurance (V Rank), the death of animal is not informed by the farmers in time (VI Rank), high claim ratio (VII Rank) are major constraints faced by insurance providers at the time of claim settlement.

2.4.2 Suggestions for improvement in services and coverage of LI

Nepali (2021) studied the farmers perception on status of livestock insurance in Surkhet district, reported that the farmers suggested premium subsidy and subsidy on feed, medicine or price of livestock rather than only on death of the livestock.

Raju and Chand (2007) in their study on progress and problems in agriculture insurance stated that majority of the farmers in villages were not literate enough to understand the provisions of policy and with the procedures of LI and such farmers were facing difficulty in insuring their animals. So, they suggested that the insurance product for rural areas should be simple in design and presentation which could be understood easily.

Singh and Hlophe (2017) reported that most of the farmers indicated that the knowledge they have on the availability of livestock insurance was not adequate for them to decide whether to purchase livestock insurance or not. This means that farmers want to know more information on insurance for them to make an informed decision.

2.4.3 Duration of claim settlement

IRMA (2008) report on insurance schemes of Government of India stated that as per data compiled by the Department of Animal Husbandry, Dairying and

Fisheries, the time taken for settlement of claims was up to 3 months.

khan *et. al.* (2014) found that the mean time in claim settlement for livestock insurance was 104.5 days and one of the most important constraints faced by the farmers.

Trivedi and Soni (2014) studied cattle insurance in villages of Gandhinagar district and reported that farmers responded that the time taken for the claim settlement by the insurance company (1.5 to 2 months) was at satisfactory level but showed dissatisfaction on the amount of claim received.

Materials and Methods

III. MATERIALS AND METHODS

In this chapter the detailed methodology for conducting the present study is given under the following subheadings.

3.1 Research design

3.2 Sampling procedure

3.3 Operationalisation of the concepts and variables and their empirical measurements

3.4 Instruments and methods of data collection

3.5 Statistical tools employed and analysis of the data

3.6 Collaboration with other departments

3.1 RESEARCH DESIGN

Considering the objectives framed for the present study, the type of variables selected, size of the respondents and the phenomenon to be studied, an exploratory research design was adopted for the study. This design was adopted for the study to formulate a problem for more precise investigation and to develop working hypothesis from an operational point of view. The major emphasis was to discover the ideas and insights into the phenomenon and this design was flexible enough to provide opportunity for considering different aspects of a problem under the study.

3.2 SAMPLING PROCEDURE

3.2.1 Locale of the study

The study was undertaken purposively in the state of Karnataka where the studies have been not conducted with respect to LI. and to have sufficient exposure to the functioning of the DAHVS, GoK, insurance companies, livestock farmers, as well as farming situation. Researcher being familiar with local language, had an added advantage in building up quick rapport with respondents. It also enabled the researcher to carry out an in-depth study combined with scientific observations.

Karnataka is located in 11°30' North and 18°30' North latitudes and 74° East and 78°30' East longitude.

The Karnataka state has four revenue divisions namely; Bengaluru, Mysuru, Belagavi and Kalaburagi and 30 districts (excluding new district Vijayanagar which parted from Ballari district during 2021-22). Locale of study comprises selected sample districts from all the four revenue divisions of Karnataka for comprehensive study. The detailed map of locale of the study is shown in the Fig. 1.

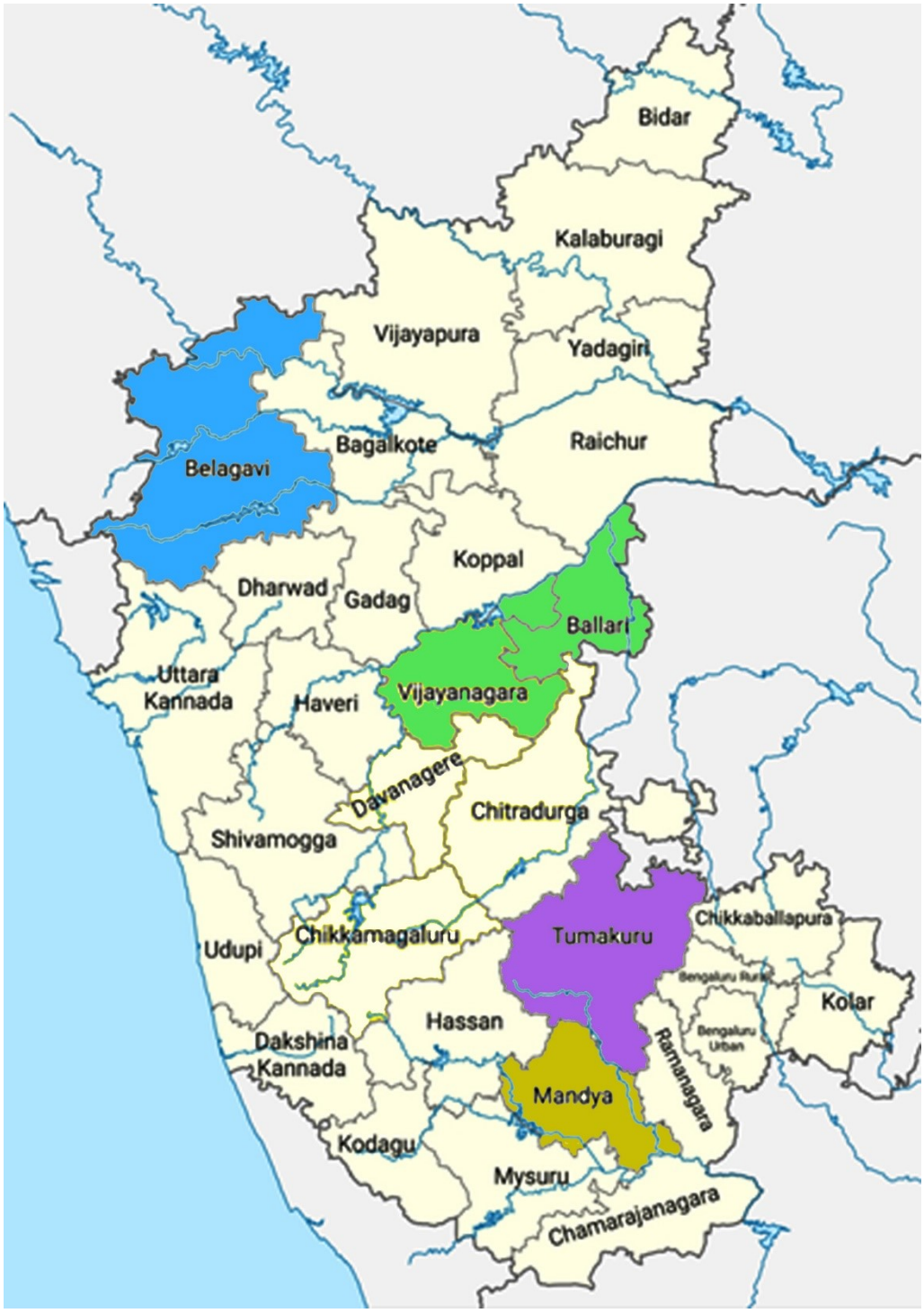

Fig 1: Karnataka map showing the districts selected for the study in different revenue divisions.

3.2.2 Selection of districts

Sample district with highest (maximum) number of livestock insured during 2019 to 2021 was purposively selected from all the four-revenue division of Karnataka. The selected districts were Tumakuru from Bengaluru division, Mandya from Mysuru division, undivided Ballari from Kalaburagi division and Belagavi from Belagavi division. Districts selected for the study and their corresponding total livestock insured is presented in Table 1 and their demographic, geographic and livestock details are presented in Table 2.

Table 1: Districts selected for the study

Sl. No	Revenue divisions	Districts	Total number of livestock insured during 2019 to 2021
1	Bengaluru	Tumakuru	245845
2	Mysuru	Mandya	153927
3	Belagavi	Belagavi	15080
4	Kalburgi	Ballari	16230

(Source: Commissioner office, AHVS, Bangaluru, 14 Milk Unions of State, Office of Karnataka sheep and wool development corporation, Bangaluru)

3.2.3 Selection of the taluks:

Two taluks from each selected district were randomly selected for the study. The selected taluks are presented in Table 3.

3.2.4 Selection of the respondents

Respondents for the study included farmers (livestock insurance adopters and non-adopters), veterinarians, officials from insurance agency and bankers dealing with the LI.

Table 2: Demographic, geographic and livestock details of districts selected

Sl.No	Particulars	Tumakuru	Mandya	Belagavi	Ballari
1	Geographical area (ha)	10,64,755	4,98,244	13,44,382	8,13,196
2	Population (No.)	26,78,980	18,05,769	4,77,961	24,52,595
3	Density (No of persons/ Km^2)	253	365	356	300
4	Forest land (ha)	45,177	24,765	1,90,424	97,017
5	Fallow land (ha)	1,86,244	90,826	1,85,253	95,380
6	Cultivable waste (ha)	62,642	41,955	11,465	24,839
7	Permanent pasture (ha)	76,453	32,049	24,877	5,472
8	Net sown area (ha)	5,20,202	2,20,010	8,15,098	4,23,114
9	Total livestock population*	22,97,188	11,82,400	28,74,915	20,88,837
10	Total cross breed cow population *	2,71,468	2,93,905	2,43,984	76,287
11	Total graded buffalo population*	57,401	65,995	3,11,001	50,569
12	Total pure graded cow population *	1,40,481	68,617	1,66,017	73,994
13	Total non-descript cow population*	19,302	7,464	1,39,539	1,92,994
14	Total non-descript buffalo population*	84,646	43,448	5,33,170	1,08,538
15	Total sheep and goat population*	17,17,934	6,93,563	14,59,420	15,71,060
16	Total pig population*	5,956	9,408	21,784	15,395

Annual Season and Crop Report, 2015, DES, Bengaluru.
*As per 20th Livestock census report.

3.2.4.1 Selection of the livestock farmers

The list of farmers who have adopted the LI was collected from the respective officers of the Department of Animal Husbandry and Veterinary Services (DAHVS) and Milk Unions. Twenty-five LI adopters were selected randomly from the selected two taluks from each district, with farmers rearing crossbred, graded and local cows and buffaloes, sheep, goat, and pig. Twenty-five LI non-adopters were selected randomly from two taluks from each district. The sample matrix and sample plan for livestock farmers is presented in Table 3 and Fig. 2 respectively.

Adopters of livestock insurance: Livestock owners who had availed livestock insurance to the livestock owned by them during the study period 2020-21.

Non-adopters of livestock insurance: Livestock owners who had never availed livestock insurance to the livestock owned by them.

3.2.4.2 Selection of respondent Veterinarians

Information was collected from 200 Veterinarians randomly across Karnataka state. It includes, Veterinarians working in DAHVS, Karnataka Sheep and Wool Development Corporation (KSWDC) and District Milk Unions.

3.2.4.3 Selection of respondent Bankers

Data was collected from 100 bankers randomly across the Karnataka state. The sample included the managers, field officers and loan disbursement officers of the banks who are involved in implementation and claim settlement of LI in their jurisdiction.

Table 3: Sample matrix of the livestock farmers selected for the study

Sl. No	Revenue divisions	Districts	Taluks	Livestock farmers		
				LI Adopters	LI Non-Adopters	Total
1	Bengaluru	Tumakuru	Tumakuru	25	25	50
			Koratagere			
2	Mysuru	Mandya	Mandya	25	25	50
			Nagamangala			
3	Kalburgi	Ballari	Hoovina Hadagali	25	25	50
			Hagari Bommanahalli			
4	Belagavi	Belagavi	Belagavi	25	25	50
			Athani			
Total				**100**	**100**	**200**

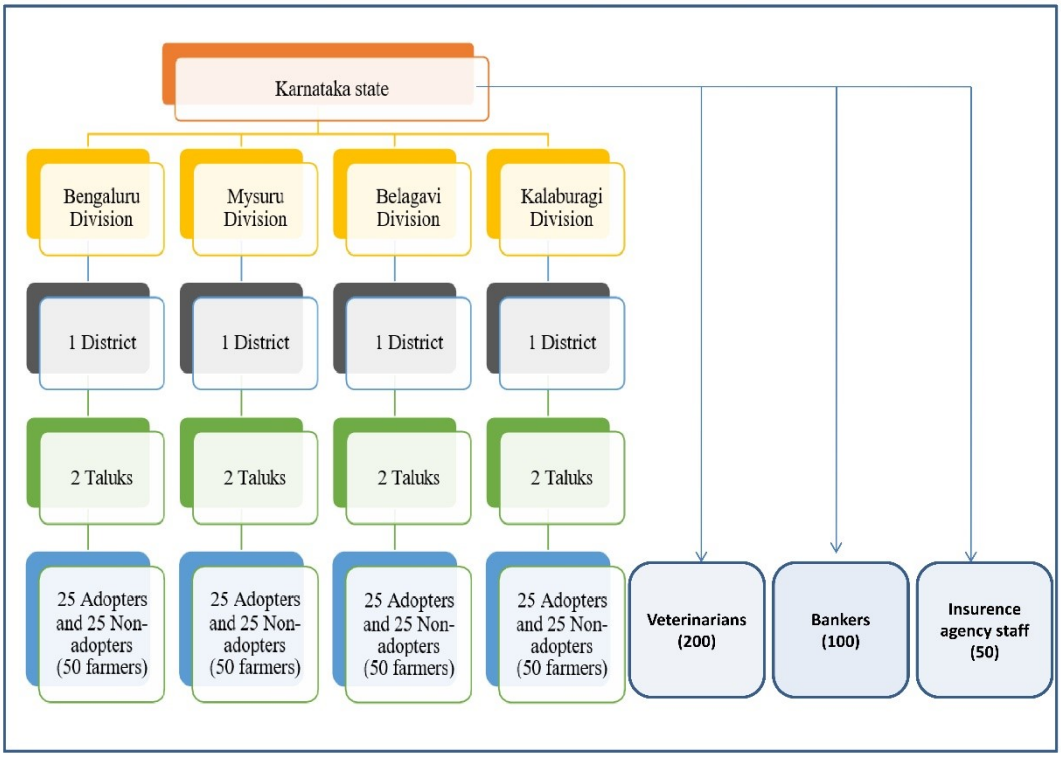

Fig. 2. Sampling plan for selection of respondents.

3.2.4.4 Selection of respondent insurance staff

Data was collected from 50 insurance company staff randomly across the Karnataka state. The sample included managers, field officers and insurance agents of the insurance companies who are involved in implementation and claim settlement of LI in their jurisdiction.

3.3 OPERATIONALISATION OF THE CONCEPTS AND VARIABLES AND THEIR EMPIRICAL MEASUREMENTS

The present study mainly aims at critically analysing the livestock insurance in Karnataka through collecting the information from the Veterinarians, Bankers, Insurance agency staff and livestock farmers. The variables found to have high relevance to the present investigation were selected based on extensive review of literature related to the topic of research and in consultation with the experts. Variables and their measurements are detailed in Table 4.

3.3.1 Status of livestock insurance in Karnataka

Livestock Insurance (LI) is an important risk mitigation tool which provides a lumpsum amount by the insurance company to the livestock owner on the loss of the animal in return to the premium payment done by the farmer. Loss in performance and transit insurance is also covered on additional payment of the premium.

Table 4: Distribution of variables and their empirical measurements

Sl. No	Variable	Empirical measurement
I	**Status of Livestock insurance in Karnataka**	Secondary sources
II	**Socio-economic profile of livestock farmers**	Schedule developed for the study
1	Education	As per Kenchanagoudra (2007) method with suitable modifications
2	Land holding	As per Subhash (2002) method with suitable modification
3	Livestock possession	Adult Cattle Units (ACUs) conversion coefficients proposed by Kumbhare *et al*. (1983) with suitable modifications
4	Social participation	Schedule developed for the study
5	Extension participation, Extension contact	Schedule developed for the study
III	**Awareness level and adoption of livestock insurance**	
1	Awareness level of livestock farmers on livestock insurance	Schedule developed for the study
2	Experience in LI, sources of information	Schedule developed for the study
3	Reasons for insuring livestock, sources of LI, renewal pattern	Schedule developed for the study
4	Factors influencing the adoption of livestock insurance	Schedule developed for the study
5	Level of satisfaction among the livestock farmers about LI	Schedule developed for the study
IV	**Constraint analysis of livestock insurance**	
1	Constraints faced by farmers	Schedule developed for the study
2	Constraints faced by veterinarians, bankers, and insurance agency staff	Schedule developed for the study
3	Wants of the livestock farmers	Schedule developed for the study
4	Suggestions from veterinarians, bankers and insurance agency staff	Schedule developed for the study
5	Duration of claim settlement	Schedule developed for the study

3.3.2 Socio- economic profile of livestock farmers

3.3.2.1 Age: It is taken as the number of completed years of the respondent at the time of investigation. To know the age of the respondent an open-ended schedule was used. Based on class interval (inclusive) method, the respondents were categorized as young, middle, and old age groups. The results were expressed in frequency and percentage.

3.3.2.2: Sex: Sex was operationally defined as the biological sex of the respondent, measured by dichotomous categorization as male and female. The male was encoded with zero and female with one.

3.3.2.3: Education: In the present study, education is operationalized as respondent's ability to read, write and number of years of formal education received. The categorization of respondents was done in accordance with the procedure followed by Kenchanagoudra (2007), with suitable modifications. The results were expressed in frequency and percentage.

3.3.2.4: Family type: Family type was divided dichotomously as nuclear family and joint family. Nuclear family is operationally referring to family structure that consists of husband and wife living with their children. Joint family is operationally defined as family group that consists of grandparents, parents, children, and other relatives living in one house sharing common kitchen. The family type was measured with scores of 0 and 1 for joint and nuclear family respectively and the respondents were categorized accordingly and expressed in frequency and percentages.

3.3.2.5: Family size: Size of family refers to the total number of adult and young members in the family, in other words, the number of individuals of both sexes living

together in a household sharing the common kitchen. The family size was represented in frequency and percentage against each category.

3.3.2.6: Primary occupation: It is taken as respondent's principal means of earning livelihood as perceived by the respondent. It refers to the main source of income of the family. An open schedule was used for the study and further it was categorized into animal husbandry/ agriculture/ salaried/ business/ agricultural labour. The results were expressed in frequency and percentages.

3.3.2.7: Secondary occupation: It is taken as respondent's second principal means of earning livelihood as perceived by the respondent. It is taken as other means of income to the family. An open schedule was used for the study and further it was categorized into animal husbandry/ agriculture/ salaried/business/ agricultural labour. The results were expressed in frequency and percentages.

3.3.2.8: Land holding: It is defined as the total number of acres of land possessed by the respondent. The land holdings of all the respondents were converted by following the criterion prescribed by the Karnataka land reforms act 38 of 1966. As per this act, one acre of irrigated or garden land was equivalent to 3 acres of dry land. The classification of the respondents into different categories was done according to the procedure followed by Subhash (2002) with suitable modifications.

3.3.2.9: Experience in livestock rearing: It is defined as the actual number of years completed by a farmer since the start of his involvement in livestock rearing. It was measured directly with an open-ended question separately for native and crossbreeds, which was categorized into low, medium, and high based on class interval (inclusive) method.

Sl. No	Category	Land holding (in acres)
1	Landless	Nil
2	Marginal farmers	Up to 2.50 acres
3	Small farmers	2.51 to 5.00 acres
4	Semi-medium farmers	5.01 to 10.00 acres
5	Medium farmers	10.01 to 25.00 acres
6	Large farmers	25.01cres and above

3.3.2.10: Livestock possession: It is defined as the total adult and young livestock viz., cattle, buffalo, sheep, goats and pigs possessed by the respondents in three categories namely native, crossbred and exotic. Results were recorded in numbers. The livestock numbers were converted into Adult Cattle Units (ACUs) accounting to conversion coefficients of Kumbhare *et al.,* (1983) as shown in below.

Livestock species	Adult			Young		
	Native	CB	Exotic	Native	CB	Exotic
Cattle	1	1.14	1.14	0.34	0.5	0.5
Buffalo	1	1.14	1.14	0.4	0.5	0.5
Sheep	0.1	0.15	0.2	0.03	0.04	0.05
Goat	0.1	0.15	0.2	0.02	0.03	0.04
Pig	0.2	0.4	0.4	0.03	0.04	0.05

3.3.2.11: Animal procurement: It is defined as the source of procurement of existing animals at the time of interview. Recorded the sources of procurement of cattle, buffalo, sheep, goat and pigs by the respondent farmers as farm born/ own investment/ external finance / purchased under schemes.

3.3.2.12: Family annual income: It is defined as the total income earned by all the members of the family from various means per year as expressed by respondent in rupees. The annual income of the respondent's family was calculated by considering income from animal husbandry, agriculture, and other sources during the previous year. The income was summed up and the respondents were classified into low, medium and high. The results were expressed in frequency and percentage

Category	Score range (₹)
Low	< 1,00,000
Medium	1,00,000- 2,50,000
High	> 2,50,000

3.3.2.13: Social participation: Social participation refers to the degree of involvement and participation of the respondent or any member of family either as a member or office bearer in different organizations.

3.3.3 Awareness level and adoption of livestock insurance

3.3.3.1 Information seeking behaviour of livestock farmers: It is expressed by their extension participation and extension contact characters explained below, along with the sources of information.

3.3.3.1.1 Extension participation: It is operationally defined as frequency of family members participating in the extension activities during a year. This variable was measured with the help of a closed schedule response. For determining the degree of information seeking by the respondents, three categories namely, "regularly", "occasionally", and "never" were provided with weightage of 2, 1 and 0 respectively. All the scores on sub items were summed and the respondents were classified as high,

medium, and low extension participation for information seeking behaviour based on class interval inclusive method.

3.3.3.1.2 Extension contacts: It is defined as frequency of the family members interaction with the extension advisories during a year for seeking information regarding animal husbandry. This variable was measured with the help of a closed schedule response. For determining the degree of information seeking by the respondents, three categories namely, “regularly”, “occasionally”, and “never” were provided with weightage of 2, 1 and 0 respectively. All the scores on sub items were summed and the respondents were classified as high, medium, and low extension contact for information seeking behaviour based on class interval inclusive method.

3.3.3.1.3 Sources of information about livestock insurance: The respondents were asked to answer the close ended question regarding source of information leading to their adoption of livestock insurance. Results were recorded and expressed in frequency and percentages.

3.3.3.2 Awareness level of farmers about livestock insurance: Awareness is the ability to directly know and perceive, to feel, or to be cognizant of the events. Here it is operationally defined as whether the farmers know and are aware about the livestock insurance. A set of statements were developed with the scale of 1 and 0 for ‘aware’ and ‘not aware’ respectively.

3.3.3.3 Adoption of livestock insurance:

3.3.3.3.1 Factors influencing the adoption of livestock insurance: Livestock farmers were asked to rank each of the possible factors relevant to them, which

influenced them in adoption of livestock insurance according to the degree of importance as perceived by them. As all the items were not ranked uniformly by all the respondents the method of combining of incomplete order of merit ratings as suggested by Garrett (1981) was followed.

3.3.3.3.2 Number of livestock insured: It refers to the species-wise (native and cross bred) total number of livestock insured at the time of investigation by the farm family. Results were recorded and expressed in frequency.

3.3.3.3.3 Reason for insuring livestock: Respondents were asked to answer the close ended question regarding reason for insuring their livestock: as a risk transfer management tool or because it is mandatory for schemes and loans. Results were recorded and expressed in frequency and percentages.

3.3.3.3.4 Sources of LI: Respondents were asked to answer the close ended questions regarding sources of LI through which they have availed insurance at the time of investigation. Results were recorded and expressed in frequency.

3.3.3.3.5 Experience in LI: Respondents were asked to answer the close ended question regarding number of completed years of experience in availing LI through different facilitators. The observations were categorized into low, medium, and high based on class interval (inclusive) method. Results were recorded and expressed in frequency and percentages.

3.3.3.3.6 Renewal of LI: Respondent farmers were questioned as whether they have ever renewed the insurance after the completion of validity period for their livestock and the responses were recorded as 1 for ‘Yes’ and 0 for ‘No’.

3.3.3.3.7 Level of satisfaction among the livestock farmers about LI: It is operationally defined as the satisfaction level attained as perceived by the farmer. This variable was measured with the help of a closed schedule response. For determining the level of satisfaction, a list of seven statements related to availing and claim settlement of LI were posed to the respondents, and the answers were collected using three-point continuum namely, "highly satisfied", "satisfied", and "not satisfied" with weightage of 2, 1 and 0 respectively. Weighted means were calculated, and the statements were ranked based on the scores.

3.3.4 Constraint analysis of livestock insurance

3.3.4.1 Constraints in LI: Constraints for the present study have been operationalized as hurdles or limitations experienced by all the stakeholders of LI such as farmers, veterinarians, insurance agencies and bankers with respect to the insurance policy in general, while availing/ implementing LI, and at the time of claim settlement.

3.3.4.1.1 Constraints of livestock farmers: It refers to the problems perceived by the livestock farmers in the study area. Based on the analysis of available literature, field level interaction and discussion with different stakeholders, an exhaustive list of total 39 constraints in livestock insurance were listed and categorized into three categories viz., general constraints (12), constraints in availing LI (13) and constraints in claim settlement (14). A semi structured interview schedule containing the list of identified constraints was administered to the farmers asking them to rank them according to their priority. Further, Garrett ranking method was used to rank them.

3.3.4.1.2 Constraints faced by Veterinarians, Bankers, and Insurance agency staff: It refers to the problems perceived by the Veterinarians, Bankers and insurance agency staff in the study area. Based on the analysis of available literature, field level interaction and discussion with different stakeholders, an exhaustive list of total 26 constraints in livestock insurance were listed and categorized into two categories viz., constraints in implementation of LI (13), constraints in claim settlement LI (13). A structured interview schedule containing the list of identified constraints was administered to the Veterinarians working in DAHVS, Milk Unions and KSWDC on a 3-point continuum as 'Very important', 'Less important' and 'Not a constraint' with a score of 3, 2 and 1 respectively asking them to respond according to their perceptions. Further, weighted mean scores method was used to rank them.

Similarly, list of total 09 constraints in implementation and claim settlement of livestock insurance were listed for bankers. A structured interview schedule containing the list of identified constraints was administered to the bank managers, field officers and loan disbursement officers on a 3-point continuum as 'Very important', 'Less important' and 'Not a constraint' with a score of 3, 2 and 1 respectively asking them to respond according to their perceptions. Further, weighted mean scores method was used to rank them.

A list of total 16 constraints in livestock insurance were listed for insurance agency staff and categorized into two categories viz., constraints in implementation of LI (09), constraints in claim settlement LI (07). A structured interview schedule containing the list of identified constraints was administered to the officers and insurance agents on a 3-point continuum as 'Very important', 'Less important' and 'Not a constraint' with a score of 3, 2 and 1 respectively asking them to respond

according to their perceptions. Further, weighted mean scores method was used to rank them.

3.3.4.2 Suggestions for improvement in services and coverage of LI: Suggestions for the present study have been operationalized as the opinions presented by, all the stakeholders of LI such as farmers, veterinarians, insurance agencies and bankers with respect to bringing in improvement in the services and coverage of LI.

3.3.4.2.1 Livestock farmers' wants: It refers to the requirements as perceived by the livestock farmers in the study area regarding livestock insurance. Based on the analysis of available literature, field level interaction and discussion with different stakeholders, a list of total 12 wants pertaining to livestock insurance were listed.

3.3.4.2.2 Suggestions of veterinarians, bankers and insurance agency staff: It refers to the perceived opinions of the veterinarians, bankers and insurance agency staff in the study area. Based on the analysis of available literature, field level interaction and discussion with different stakeholders, a list of total 12 suggestions to improve the services and coverage of LI were listed. A list of statements on a 3-point continuum as 'Strongly agree', 'Agree' and 'Disagree' with a score of 3, 2 and 1 were used.

Similarly, list of total 12 suggestions to improve the services and coverage of LI were listed for bankers. A list of identified constraints was administered to the bank managers, field officers and loan disbursement officers on a 3-point continuum as 'Strongly agree', 'Agree' and 'Disagree' with a score of 3, 2 and 1 respectively asking them to respond according to their perceptions. Further, weighted mean scores method was used to rank the suggestions.

A list of total 11 suggestions to improve the services and coverage of LI were listed for the insurance agency staff. A list of identified constraints was administered to the officers and insurance agents on a 3-point continuum as 'Strongly agree', 'Agree' and 'Disagree' with a score of 3, 2 and 1 respectively asking them to respond according to their perceptions. Further, weighted mean scores method was used to rank the suggestions.

3.3.4.3 Duration of claim settlement

This is operationally defined as the average time taken from the date of death of insured animal to the date of transfer of indemnity to farmers' account. It is calculated, by collecting the data from the veterinarians (DAHVS and Milk Unions), bankers, insurance agency staff and farmers. This was calculated only for dairy cattle and buffaloes.

Details on the date of death of animal, date of intimation to the veterinarians, insurance agency, bankers (if financed), date of post mortem, date of visit of insurance agency staff for inspection, date of request for claim form, date of receipt of claim form, date of submission of filled claim form to the milk union (if mediated by milk union)/ banks (if mediated by banks) and finally to the insurance company, date on which the amount was deposited to the milk union (milk union mediated), date of transfer of indemnity to farmers' account .

The above details were collected for 40 claim settlements mediated by DAHVS, 20 each mediated through banks and four milk unions (Tumakuru, Mandya, Belagavi and Ballari). Critical path analysis was performed to calculate the duration of claim settlement mediated by DAHVS, Banks and Tumakuru Milk Union.

3.4 INSTRUMENTS AND METHODS OF DATA COLLECTION

3.4.1 Construction of interview schedule

The semi structured interview schedules were developed for data collection from the farmers adopted livestock insurance (adopters) and those farmers who have not adopted livestock insurance (non-adopters), veterinarians (working in DAHVS, Milk Unions and KSWDC), bankers, and insurance company staff / officials. These tools were developed in consultation with the experts in the field of veterinary extension and through review of literature, keeping in view the objectives and variables of the study.

Statements for analysis of awareness level of livestock farmers, satisfaction level of farmers, constraints of farmers, constraints and suggestions of implementing officers (veterinarians, bankers and insurance agency staff) were sent to the expert panel for their responses on three-point continuum. Those statements with highest scores were selected for the study and were included in the interview schedules.

The schedules developed were initially pre-tested in non-sample area in the actual field situation among insurance adopted and non-adopted farmers, veterinarians, bankers, and insurance company staff / officials and suitable modifications were made based on the experience gained before administering in the main study area. The final interview schedules used for the study are provided in the Appendix.

Plate 1: Data collection from dairy farmer

Plate 2: Data collection from sheep farmer

Plate 3: Data collection from non-adopters

Plate 4: Focus group discussion with the veterinarians

Plate 5: Data collection from veterinarian (DAHVS)

Plate 6: Data collection from milk unions

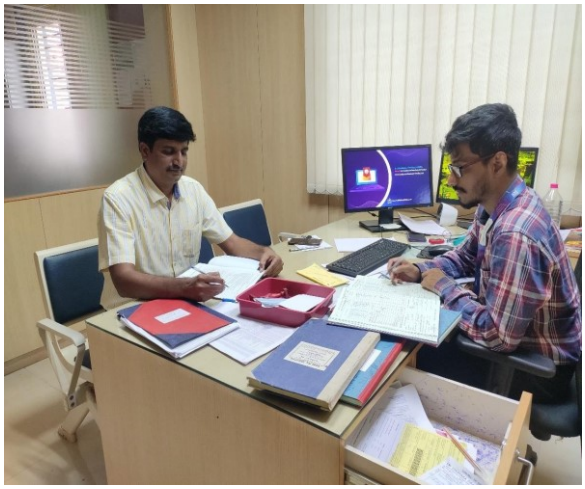

Plate 7: Data collection from bankers

Plate 6: Data collection from staff of Insurance agency

3.4.2 Establishment of rapport with the respondents and data collection

The background information and familiarization with the study area was obtained in consultation with the key informants, veterinary professionals working in the study area, experts, and available secondary sources. This process helped the researcher to build a rapport with respondents and enable them to elicit an accurate information in a conducive atmosphere.

Data collection was done with the farmers by making informal visits to their farm or home in the early hours of the day or during their free time. This helped in getting desired cooperation, valid and reliable information from the respondents. Interview schedule was prepared in English and then translated to Kannada. The selected respondents were personally interviewed to collect the data. It was made sure that all questions were self-explanatory and farmers were interviewed in their local language individually by the the investigator. Information from the veterinarians/ bankers/ insurance office staff was collected personally at their offices.

The data collected were purely based on stakeholders' responses. Information was also collected through group discussion, reports and records.

District-wise data on livestock insured under various schemes during the year 2019- 20 and 2020-21 was collected. Livestock census was also collected. This secondary data was collected from the Office of the Commissioner, Department of Animal Husbandry and Veterinary Services (DAHVS), Government of Karnataka, Karnataka Milk Federation, Bengaluru, 14 Milk Unions of Karnataka, Karnataka Sheep and Wool Development Corporation. Data on 20th livestock census was obtained from Office of the Joint Director, Statistics Division, DAHVS, Bengaluru.

The analysis was carried out from the following angles to understand the status of livestock insurance in Karnataka.

1. Sources of livestock insurance, insurance facilitators and insurance providers in public and private sector during the year 2019-20 and 2020-21.
2. Types of insurance available in Karnataka, risks covered and facilitator-wise insurance schemes available during the year 2019-20 and 2020-21. The guidelines followed in the schemes in selection of beneficiaries and fixing premium.
3. Livestock insurance premium rates prevailing during the year 2019-20 and 2020-21 and the popular animal identification methods followed.
4. Division-wise and district-wise livestock population (based on 20th livestock census) for the species considered for the study.
5. Division-wise and district-wise number and percentage of cattle, buffaloes, sheep, goats and pigs insured under schemes.
6. Trend in the livestock insurance in Karnataka in National Livestock Mission (NLM) insurance scheme.

3.5. STATISTICAL TOOLS EMPLOYED AND ANALYSIS OF THE DATA

The data collected from the sample respondents were coded, tabulated, analysed and presented in the form of tables and graphs. The various need based statistical tools like frequency and percentages, mean values, Garrett ranking scores, correlation using MS Excel and SPSS 20.0 software.

3.5.1 Mean

It is the sum of all the values of the observations divided by the total number of observations, symbolically, it is represented as.

$$X = \sum X / N$$

Where, X: Arithmetic mean

$\sum X$: Sum of all the variables of observations

N: Total number of observations.

3.5.2 Frequency and percentage

Frequency and percentage were used to know the distribution pattern of respondents according to variables. Percentages were used for standardization of size by calculating the number of individuals that would be in each category if the total number of cases were 100. It was also used in the response analysis of problems and impact of recommended livestock development interventions among the livestock farmers.

3.5.3 Garrett ranking

The formula for per cent position suggested by Garrett (1981) is

$$\text{Per cent position} = 100 (Rij - 0.50) / N j$$

Where Rij is the rank given for the i^{th} factor by the j^{th} individual,

Nj is the number of factors ranked by the individual.

The per cent positions thus obtained were converted into scores by referring the table given by Garrett. Then for each problem the scores of individual respondents were added and divided by the number of respondents. The mean score for all the problems were arranged and thus ranks were assigned to the problems.

3.6 COLLABORATION WITH OTHER DEPARTMENTS

1. Department of Animal Husbandry and Veterinary Services (DAHVS) GoK.
2. Karnataka Sheep and Wool Development Corporation Ltd. (KSWDC), Bengaluru.
3. Karnataka Milk Federation (KMF), Bengaluru (14 Milk Unions of Karnataka).
4. Financial institutions funding for livestock purchase of the area.
5. Livestock Insurance companies of Karnataka.

Results

IV. RESULTS

In consistence with the objectives set forth for the study, the data was collected, tabulated and analysed. The results are presented under the following subheadings:

4.1 Status of livestock insurance in Karnataka.

4.2 Socio-economic profile of livestock farmers.

4.3 Awareness level and adoption of livestock insurance.

4.4 Constraint analysis of livestock insurance.

4.1 STATUS OF LIVESTOCK INSURANCE IN KARNATAKA

Information regarding the status of livestock insurance in Karnataka is collected and presented under the following headings.

4.1.1 Sources of livestock insurance

It was recorded that the implementation of livestock insurance in Karnataka was undertaken through a vast network of facilitators. A perusal of Table 5 revealed that there are four facilitators namely, Department of Animal Husbandry and Veterinary Services (DAHVS), 14 District Cooperative Milk Producers' Unions, Karnataka Sheep and Wool Development Corporation (KSWDC) and Public and Private Banks funding livestock purchases. It was noted that none of the insurance companies provided livestock insurance when approached directly by the livestock farmer. Livestock insurance was provided only if facilitated through the above-mentioned facilitators.

A careful study of the table unveils two types of insurance providers, public sector and private sector insurance companies. Four public sector insurance companies namely, The Oriental Insurance Company, National Insurance Company,

Table 5: List of livestock insurance providers and facilitators

Sl. No	Insurance facilitators
1	Department of Animal Husbandry and Veterinary Services, GoK
2	District Milk Producers Cooperative Unions
3	Karnataka Sheep and Wool Development Corporation
4	Public and Private Banks funding livestock purchase
	Insurance Providers
A	**Public sector**
1	The Oriental Insurance Company
2	National Insurance Company
3	United India Insurance Company
4	New India Assurance Company
B	**Private sector**
1	SBI General Insurance
2	IFFCO-Tokio General Insurance Company
3	Bajaj Allianz General Insurance Company
4	Future Generali Total Insurance Solutions
5	Royal Sundaram General Insurance
6	ICICI Lombard Rural Insurance
7	TATA-AIG Rural Insurance
8	HDFC-ERGO Rural Insurance
9	Universal Sompo General Insurance Company
10	Sri Ram General Insurance Company

United India Insurance Company and New India Assurance Company are providing livestock insurance in the state. Further, a list of insurance companies providing livestock insurance in Karnataka was collected and the results are presented in Table 5.

4.1.2 Types of livestock insurance

Detailed observation of Table 6 revealed that three types of risks in livestock rearing are covered under livestock insurance policies in Karnataka, and they are;

1. **Death of Livestock:** The livestock owner receives the indemnity in the event of death of the insured livestock due to various reasons enlisted in the perils.
2. **Permanent Total Disability (PTD):** Seventy-five per cent of the insured amount is disbursed to the livestock owner if it remains and declared useless for which it is meant for; by receiving an additional premium at the time of insurance. The policy is extended to cover PTD as applicable below:

    a. **Milch cattle:** Permanent and total incapacity to conceive or permanent and total loss of capacity to yield milk due to complete cessation of milking.
    b. **Stud bulls:** Permanent and total incapacity to breed.
    c. **Bullocks and castrated male buffaloes:** Permanent and total incapacity for the purpose as mentioned in the proposal.

3. **Transit insurance:** Covered when livestock is transported from one place to another beyond 80 Kms from the normal place of stabling by road or rail within India through a conveyance but not by foot.

Further study of Table 6 reveals that livestock insurance in Karnataka is provided by the facilitators through different schemes explained;

Table 6: Types of livestock insurance and schemes

Sl. No	Types /Schemes		Facilitators
I	Risks covered	Death of Livestock	All four types of facilitators
		Permanent Total Disability (PTD)	
		Transit insurance	
II	Insurance Schemes	National Livestock Mission (NLM) – Sub-mission on Extension and Innovation	Department of Animal Husbandry and Veterinary Services
		National Livestock Mission (NLM) – Sub-mission on breed development	
		Beneficiary oriented schemes	
		Free livestock insurance for SC/ ST livestock owners	
		Group cattle insurance scheme	District Cooperative Milk Producers' Unions
		Beneficiary oriented schemes	Karnataka Sheep and Wool Development Corporation
		Bank facilitated livestock insurance	Public and Private Banks

1. **National Livestock Mission (NLM) – Sub-mission on Extension and Innovation:** Implemented by the DAHVS, GoK with an objective to provide protection mechanisms to the farmers against any eventual loss of their animals due to death and to demonstrate the benefit of the insurance of livestock to the people.

Indigenous and crossbred milch animals are covered under this scheme and the coverage is restricted to five animals per household. The insurance premium is shared between the central and state governments and the livestock farmers as below.

Category	Central Govt share (%)	State Govt share (%)	Beneficiary share (%)
BPL / SC / ST	40%	30%	30%
APL	25%	25%	50%

In Karnataka, NLM is implemented with the rate of premium fixed at 2 per cent of the amount of animal insured. The animal is insured for its current market value.

2. **National Livestock Mission (NLM) – Sub-mission on Breed Development:** Implemented by the DAHVS, GoK with an objective to promote animal husbandry through the distribution of improved breeds of sheep or goats or pigs to the selected farmers with subsidy in unit cost. All animals thus distributed are compulsorily insured under this scheme. Premium rates of the insurance company linked with the financing bank will be applied.
3. **Beneficiary oriented schemes:** Implemented by the DAHVS, funded by the state government with four components namely, General, Special Component Plan (SCP) Tribal Sub Plan (TSP) and Women. The purchase of dairy animals by the selected beneficiaries is partially funded with mandatory insurance cover. Premium rates of the insurance company linked with the financing bank will be applied.
4. **Livestock insurance for SC/ST livestock owners**: Implemented by the DAHVS, and completely funded by the state government. 100 per cent subsidy on insurance premium for SC/ST farmers rearing cattle, buffalo, and bullocks for three years. The animal is insured for its current market value with a ceiling of fifty thousand rupees at a premium rate of 5.7 per cent. Premium is completely borne by the state government.
5. **Group cattle insurance scheme:** This scheme is being implemented by all fourteen District Cooperative Milk Producers' Unions of Karnataka from FY 2020-21. Cattle

and buffaloes between 2 to 8 years of age can be insured in this scheme. Premium rates vary between 1.80 and 2.05 per cent based on the tender quotes by the insurance companies. The premium amount is shared between the dairy farmer and milk union. Kolar, Tumakuru, Shivamogga, Mysuru, Hassan and Chamarajanagar milk unions have set up Raita Kalyan trust, which also bears the insurance premium amount. All milk unions implement insurance with an indemnity period of one year whereas, Mysuru and Dakshina Kannada milk unions provide coverage for three years. The animal is insured for its current market value with a ceiling of sixty thousand rupees.

6. **Beneficiary oriented schemes:** Implemented by KSWDC, funded by the state government with two components namely; Special Component Plan (SCP) and Tribal Sub Plan (TSP). The purchase of sheep or goats by the selected beneficiaries is partially funded with mandatory insurance cover. Premium rates of the insurance company linked with the financing bank will be applied.
7. **Bank facilitated livestock insurance:** Banks have made it mandatory to insure the livestock purchased for which the loan is disbursed, to safeguard the animal owner as well as the bank from loss due to death of the animal. Premium rates of the insurance company linked with the financing bank will be applied.

4.1.3 Livestock insurance premium rates and identification methods

A premium amount is charged by the insurance company for insurance coverage of the animal according to the indemnity period and market value of the animal. A perusal of Table 7 unveils that the premium rates of all insurance companies for one year indemnity vary between four and five per cent of the market value of the animal. Premium rates for three-year indemnity vary between 10 to 12 for the majority of the

companies, while SBI General Insurance charges 15 per cent. Premium rates are finalized by the divisional or regional managers of the insurance companies depending upon the claim ratios prevailing in their jurisdiction. Additional one per cent premium is charged each for PTD and transit insurance.

It is observed from Table 8 that most insurance companies and Milk Unions use plastic ear tags for identification of livestock, which replaces older brass ear tags. DAHVS uses 12-digit barcoded Unique Animal Identification (UAID) ear tags, while ICICI Lombard Rural Insurance is using muzzle print and Radio Frequency Identification Device (RFID) tags for animal identification.

4.1.4 Livestock population of Karnataka

Secondary data on the 20th Livestock census 2019 for Karnataka state was collected and presented in the Table 9. Apropos Table 9 unveiled that Bengaluru division had the highest (89,82,484) total livestock population, followed by Belagavi, Kalaburagi and Mysuru. Mysuru division had the highest (25,27,166) cattle population, followed by Bengaluru, Belagavi and Kalaburagi. Buffalo population was highest (15,32,127) in Belagavi division, followed by Kalaburagi, Bengaluru and Mysuru. The goat population was highest (20,76,114) in Belagavi division, followed by Kalaburagi, Bengaluru and Mysuru. Bengaluru division had the highest (4349722) sheep population, followed by Kalaburagi, Belagavi and Mysuru. The pig population was recorded highest (125993) in Kalaburagi division, followed by Belagavi, Bengaluru and lastly Mysuru.

Table 7: Premium rates of livestock insurance

Sl. No	Name of insurance company	Premium rates (percentage of animal value)	
		1-year indemnity period	3-year indemnity period
1	The Oriental Insurance Company	4 to 5	11 to 12
2	National Insurance Company	4	11 to 12
3	New India Assurance Company	5	12
4	United India Insurance Company	4 to 5	12
5	IFFCO-Tokio General Insurance Company	4	10 to 11
6	Universal Sompo General Insurance Company	4.8 to 5	12
7	Bajaj Allianz General Insurance Company	4	12
8	SBI General Insurance	5	15
9	ICICI Lombard Rural Insurance	4 to 5	10 to 11
	Permanent Total Disability (PTD) - optional	Additional 1	
	Transit insurance - optional	Additional 1	

Table 8: Identification methods used by facilitators and insurance companies

Sl. No	Name of insurance company	Identification methods
1	The Oriental Insurance Company	Plastic ear tag
2	National Insurance Company	Plastic ear tag
3	New India Assurance Company	Plastic ear tag
4	United India Insurance Company	Plastic ear tag
5	IFFCO-Tokio General Insurance Company	Plastic ear tag
6	Universal Sompo General Insurance Company	Plastic ear tag
7	Bajaj Allianz General Insurance Company	Plastic ear tag
8	SBI General Insurance	Plastic ear tag
9	ICICI Lombard Rural Insurance	Muzzle print and RFID
10	DAHVS	Bar coded plastic ear tags
11	Milk Unions	Plastic ear tag

Table 9: Livestock population of Karnataka

Sl. No		Districts	Cattle	Buffalo	Goat	Sheep	Pig	Total
1	Bengaluru Division	Bengaluru Urban	153861	11168	62464	82873	28046	338412
2		Bengaluru Rural	170722	16924	95156	118788	14131	415721
3		Ramanagara	287502	19644	150130	127988	7102	592366
4		Kolar	209642	26520	93713	483892	5292	819059
5		Chikkaballapura	213815	26397	188392	613193	2481	1044278
6		Tumakuru	431251	142047	427926	1290008	5956	2297188
7		Shivamogga	518653	120563	59719	42526	6160	747621
8		Davangere	237801	91896	79429	238367	2117	649610
9		Chitradurga	225603	113304	385058	1352087	2177	2078229
		Division Total	**2448850**	**568463**	**1541987**	**4349722**	**73462**	**8982484**
10	Mysuru Division	Mysuru	492598	21682	208206	203463	7349	933298
11		Mandya	369986	109443	346430	347133	9408	1182400
12		Hassan	548185	107971	129058	199387	1946	986547
13		Chikkamagaluru	290007	34362	41040	97962	1423	464794
14		Kodagu	71684	5236	7603	650	8365	93538
15		Dakshina Kannada	250569	1832	32215	289	6359	291264
16		Udupi	254776	2408	2676	431	3289	263580
17		Chamarajanagar	249361	9918	144633	135321	1572	540805
		Division Total	**2527166**	**292852**	**911861**	**984636**	**39711**	**4756226**
18	Belagavi Division	Belagavi	549540	844171	701741	757679	21784	2874915
19		Dharwad	172219	61245	74069	79869	4168	391570
20		Haveri	261060	85501	144969	313205	3347	808082
21		Gadag	136311	55798	191656	395899	14258	793922
22		Uttara Kannada	336312	73993	10655	8537	1193	430690
23		Vijayapura	202111	177079	569098	347070	19462	1314820
24		Bagalkot	222823	234340	383926	622856	20458	1484403
		Division Total	**1880376**	**1532127**	**2076114**	**2525115**	**84670**	**8098402**
25	Kalaburagi Division	Ballari	343275	159107	298232	1272828	15395	2088837
26		Raichur	245374	112420	282718	657633	16384	1314529
27		Koppal	231413	63467	172578	625367	8651	1101476
28		Kalaburagi	385580	73176	446200	112387	44221	1061564
29		Bidar	173634	125510	182854	85948	20838	588784
30		Yadgir	233336	57438	256848	437092	20504	1005218
		Division Total	**1612612**	**591118**	**1639430**	**3191255**	**125993**	**7160408**
Grand Total			**8469004**	**2984560**	**6169392**	**11050728**	**323836**	**28997520**

Careful analysis of the table reveals that within Bengaluru division, cattle population was highest in Shivamogga district (518653) and lowest in Bengaluru urban (153861). Buffaloes were high in numbers in Tumakuru district (142047) and lowest in Bengaluru urban (11168). Goats were high in numbers in Tumakuru district (427926) and lowest in Shivamogga (59719). Sheep population was highest in Chitradurga district (1352087), followed by Tumakuru while lowest in Shivamogga (42526). Pig population was highest in Bengaluru urban district (28046) but least (2117) in Chitradurga and Davangere.

In Mysuru division, the cattle population was highest in Hassan district (548185) and lowest in Kodagu (71684). Buffaloes (109443) and sheep (347133) were high in numbers in Mandya district and lowest in Dakshina Kannada (1832 and 289 respectively). Goat (346430) and pig (9408) population was highest in Mandya district while, lowest in Udupi (2676), and Chikkamagaluru (1423) districts, respectively.

Within Belagavi division, cattle (549540) and buffalo (136311) populations were highest in Belagavi district while lowest in Gadag (844171 and 55798 respectively). Goats (701741), sheep (757679) and pigs (21784) were highest in numbers in Belagavi district and lowest in Uttara Kannada (10655, 8537 and 1193 respectively).

Analysis of livestock population in Kalaburagi division revealed that cattle (385580) population was highest in Kalaburagi district while lowest in Bidar (173634). Goat (446200) and pig (44221) population was highest in Kalaburagi district while lowest in Koppal (172578 and 8651 respectively). Ballari district had buffaloes (159107) and sheep (1272828) in highest numbers whereas Yadgir had the lowest buffalo population (57438) and Bidar had the lowest sheep (85948) population.

Overall Karnataka state had a total livestock population of 2,89,97,520 comprising of 8469004 cattle, 2984560 buffaloes, 6169392 goats, 11050728 sheep and 323836 pigs.

4.1.5 Livestock insured under schemes

Data on the number of livestock insured through Milk Unions, DAHVS and KSWDC in Karnataka state during the FY 2019-20 and 2020-21 was collected and presented in Table 10 and 11. Milk Unions facilitated the insurance of dairy animals only, KSWDC facilitated insurance of sheep and goat only while, DAHVS facilitated insurance of cattle, buffaloes, sheep, goats and pigs.

4.1.5.1 Cattle and buffaloes insured under schemes

Careful observation of Table 10 unveiled that in Karnataka state a greater number of cattle and buffaloes were insured in 2020-21 (799836) in comparison to 2019-20 (616219). The contribution of milk unions was huge (567176 and 790505) compared to DAHVS (49043 and 9331) in both financial years respectively.

The highest number of cattle and buffaloes were insured by milk unions in Bengaluru division in both 2019-20 (460796) and 2020-21 (541358), followed by Mysuru, Kalaburagi and Belagavi division. DAHVS insured the highest number of cattle and buffaloes in Bengaluru division (14493) during 2019-20, followed by Kalaburagi, Belagavi and Mysuru. During 2020-21 DAHVS insured a smaller number of cattle and buffaloes compared to 2019-20, but Bengaluru division (4081) had the highest number of cattle and buffaloes insured, followed by Mysuru, Belagavi and Kalaburagi. It is also observed that the number of cattle and buffaloes insured across

divisions through DAHVS was better during 2019-20 than 2020-21 while the same through Milk Unions was highest during 2020-21 than 2019-20.

In Bengaluru division, during 2019-20 and 2020-21, the highest number of cattle and buffaloes were insured through Milk Unions in Ramanagara district (110297 and 121807 respectively) while the lowest numbers were in Davangere (6793 and 8239 respectively). Through DAHVS maximum number of cattle and buffaloes were insured in Tumakuru district during 2019-20 (2689) and 2020-21 (650), while the numbers were least in Ramanagara district (825 and 188 respectively). Careful study of the total number of cattle and buffaloes insured by both facilitators revealed that during 2019-20 the numbers were highest in Ramanagara district (111122) and for 2020-21 the numbers were highest in Tumakuru district (137354) but lowest in Davangere district during both years (8952 and 8707 respectively).

In Mysuru division, during 2019-20 and 2020-21, the highest number of cattle and buffaloes were insured through Milk Unions in Mandya district (66169 and 85281 respectively) while the lowest numbers were in Kodagu (0 and 152 respectively). Through DAHVS maximum number of cattle and buffaloes were insured in Mysuru district during 2019-20 (2761) and 2020-21 (706) while the numbers were least in Kodagu district (609 and 211 respectively). Detailed observation on the number of cattle and buffaloes insured by both facilitators revealed that during 2019-20 and 2020-21 highest number of cattle and buffaloes were insured in Mandya district (67437 and 85774 respectively) but least in Kodagu (609 and 363 respectively).

Table 10: Cattle and buffaloes insured under schemes

Sl. No		Districts	Cattle and Buffalo					
			Milk Unions		DAHVS		Total	
			2019-20	2020-21	2019-20	2020-21	2019-20	2020-21
1	Bengaluru Division	Bengaluru Urban	34936	59052	959	394	35895	59446
2		Bengaluru Rural	76458	76798	924	592	77382	77390
3		Ramanagara	110297	121807	825	188	111122	121995
4		Kolar	48361	53251	1510	574	49871	53825
5		Chikkaballapura	54208	55900	1649	515	55857	56415
6		Tumakuru	104441	136704	2689	650	107130	137354
7		Shivamogga	13057	16535	1255	500	14312	17035
8		Davangere	6793	8239	2159	468	8952	8707
9		Chitradurga	12245	13072	2523	200	14768	13272
			460796	**541358**	**14493**	**4081**	**475289**	**545439**
10	Mysuru Division	Mysuru	31233	44377	2761	706	33994	45083
11		Mandya	66169	85281	1268	493	67437	85774
12		Hassan	0	5528	1423	640	1423	6168
13		Chikkamagaluru	0	1893	1066	228	1066	2121
14		Kodagu	0	152	609	211	609	363
15		Dakshina Kannada	4681	26020	1031	441	5712	26461
16		Udupi	3830	20160	727	320	4557	20480
17		Chamarajanagar	0	19947	1297	412	1297	20359
			105913	**203358**	**10182**	**3451**	**116095**	**206809**
18	Belagavi Division	Belagavi	0	9601	3728	486	3728	10087
19		Dharwad	89	1128	756	138	845	1266
20		Haveri	136	3524	1557	240	1693	3764
21		Gadag	64	2161	823	100	887	2261
22		Uttara Kannada	55	1228	798	144	853	1372
23		Vijayapura	0	1420	1757	69	1757	1489
24		Bagalkot	0	2951	1497	200	1497	3151
			344	**22013**	**10916**	**1377**	**11260**	**23390**
25	Kalaburagi Division	Ballari	0	12056	2987	132	2987	12188
26		Raichur	0	3425	2827	26	2827	3451
27		Koppal	0	7677	1706	87	1706	7764
28		Kalaburagi	123	618	2119	90	2242	708
29		Bidar	0	0	2265	58	2265	58
30		Yadgir	0	0	1548	29	1548	29
			123	**23776**	**13452**	**422**	**13575**	**24198**
		Total	**567176**	**790505**	**49043**	**9331**	**616219**	**799836**

Table 11: Percentage share of cattle and buffaloes insured

Sl. No	Division	Milk Unions (%)		DAHVS (%)	
		2019-20	2020-21	2019-20	2020-21
1	Bengaluru	96.95	99.25	3.05	0.75
2	Mysuru	91.23	98.33	8.77	1.67
3	Belagavi	3.06	94.11	96.94	5.89
4	Kalaburagi	0.91	98.26	99.09	1.74
	Total	**92.04**	**98.83**	**7.96**	**1.17**

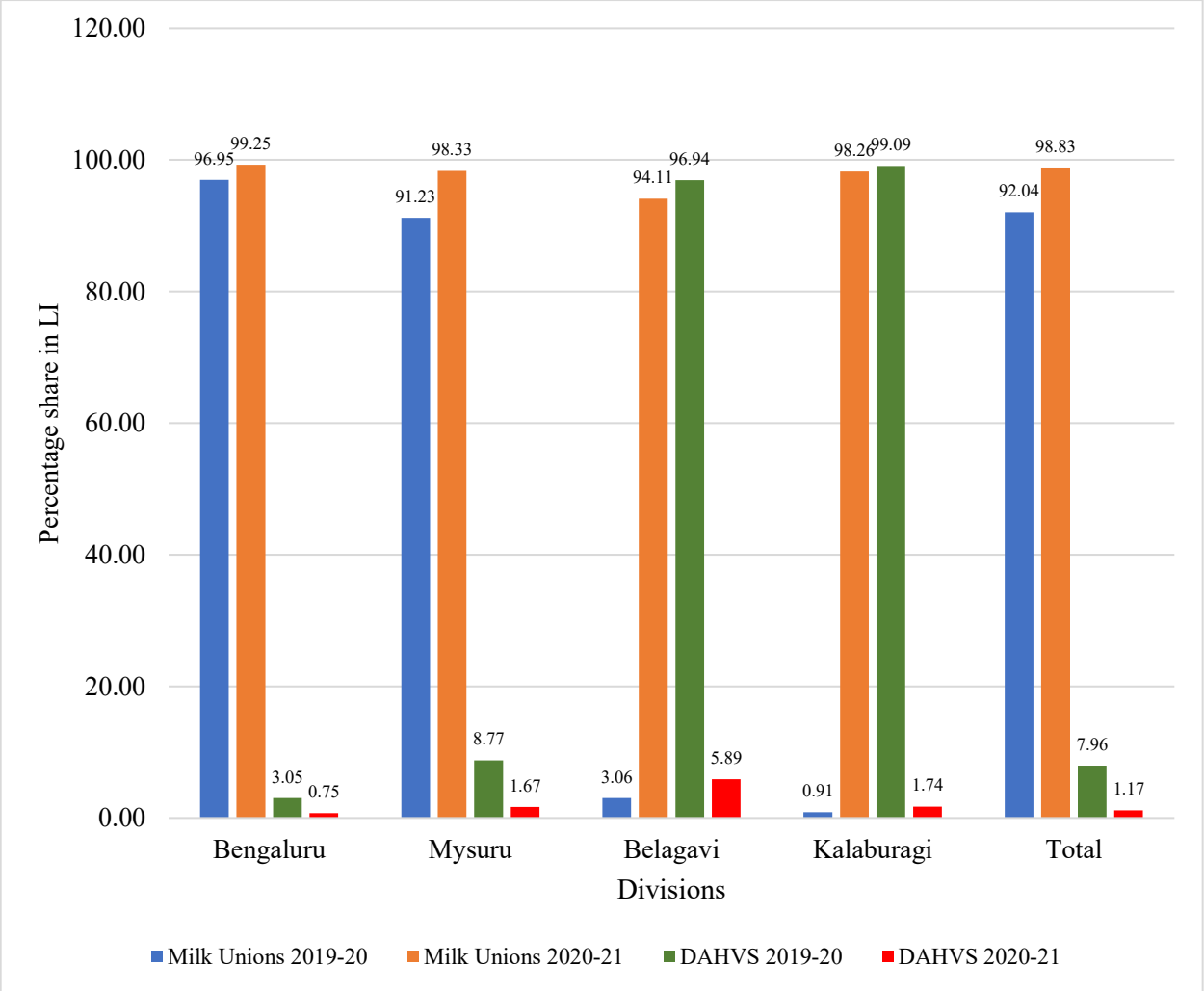

Fig 3: Percentage share of cattle and buffaloes insured

Within Belagavi division, Milk Unions insured 136 cattle and buffaloes in Haveri district while none in Belagavi, Vijayapura and Bagalkot districts during 2019-20. Further, during 2020-21 highest number of cattle and buffaloes were insured through Milk Unions in Belagavi district (9601), while the lowest numbers were in Dharwad (1128). Through DAHVS maximum number of cattle and buffaloes were insured in Belagavi district during 2019-20 (3728) and in 2020-21 (486), while the lowest numbers were in Dharwad (756) and Vijayapura (69) districts, respectively. Detailed observation on the number of cattle and buffaloes insured by both facilitators revealed that during 2019-20 and 2020-21 highest number of cattle and buffaloes were insured in Belagavi district (3728 and 10087 respectively) but least in Dharwad (845 and 1266 respectively).

Within Kalaburagi division, Milk Unions insured 123 dairy animals in Kalaburagi district while none in all other districts of the division during 2019-20. Further, during 2020- 21 Milk Unions insured the highest number of dairy animals in Ballari district (12056), followed by Koppal, Raichur, Kalaburagi, but none in Bidar and Yadgir. Through DAHVS maximum number of cattle and buffaloes were insured in Ballari district during 2019-20 (2987) and in 2020-21 (132), while the lowest numbers were in Yadgir (1548) and Raichur (26) districts, respectively. Detailed observation on the number of cattle and buffaloes insured by both facilitators revealed that during 2019-20 and 2020-21 highest number of cattle and buffaloes were insured in Ballari district (2987 and 12188 respectively) but least in Yadgir (1548 and 29 respectively).

An overall high number of cattle and buffaloes were insured in Ramanagara, Tumakuru, Mandya and Bengaluru Rural in both years while, Kodagu, Yadgir and Bidar districts were poor performers.

Perusal of Table 11 revealed that milk unions had the major share in the total number of cattle and buffalo insured during the year 2019-20 (92.04%) and 2020-21 (98.83%) while the contribution of DAHVS was a meagre during 2019-20 (7.96%) and 2020-21 (1.17%).

4.1.5.2 Meat animals (sheep, goats, and pigs) insured under schemes

Detailed observation of Table 12 revealed that in Karnataka state highest number of meat animals were insured in 2020-21 (799836) than in 2019-20 (616219). DAHVS insured pigs, sheep, and goats during FY 2020-21 only while, KSWDC insured sheep and goats during 2019-20 and 2020-21. Still, the number of meat animals insured through DAHVS was higher compared to KSWDC.

A total of 3040 pigs were insured in 2020-21 through DAHVS. The highest numbers were seen in Mysuru division (1560), followed by Bengaluru, Kalaburagi and Belagavi (220) divisions. District-wise analysis revealed that the highest number of pigs were insured in Kodagu district (800), followed by Kolar, Tumakuru, Hassan, Chikkaballapura, Chikkamagaluru, Mysuru, Belagavi, Bengaluru Urban and Mandya. While no pigs were insured in Davangere, Chitradurga, Dharwad, Gadag, Vijayapura, Bagalkot and Bidar districts.

During 2020-21, a total of 8184 sheep and goats were insured through DAHVS in Karnataka state, with Bengaluru division leading the table (2585), followed by Kalaburagi, Belagavi and Mysuru (1023) divisions. District-wise analysis revealed that

the highest numbers of sheep and goats were insured in Chitradurga (704) district, followed by Tumakuru, Belagavi, Vijayapura, Ballari, Bagalkot, Bidar, Raichur, Mandya, Yadgir, Chikkaballapura, Koppal. No sheep and goats were insured in Kodagu district, while the numbers were low in Bengaluru Urban, Dharwad, Shivamogga, Chikkamagaluru, Udupi, Dakshina Kannada, Uttara Kannada districts.

KSWDC facilitated insurance to 5247 sheep and goats during 2019-20 and 2793 during 2020-21 in the state. The highest number of sheep and goats were insured in Kalaburagi division during 2019-20 (1793) and 2020-21 (945), followed by Bengaluru, Belagavi and Mysuru (913 and 336 respectively) divisions. District-wise analysis for 2019- 21 revealed that the highest number of sheep and goats were insured in Raichur (385) district, followed by Ballari, Belagavi, Koppal, Yadgir, Tumakuru districts and the numbers were least in Dakshina Kannada, Uttara Kannada, Kodagu, Udupi districts. Further during 2020- 21, the highest number of sheep and goats were insured in Bidar (329) district, followed by Ballari, Belagavi, Tumakuru, Chitradurga, Raichur, Koppal, Yadgir districts but none of the sheep and goats were insured through KSWDC in Dakshina Kannada, Uttara Kannada, Kodagu, Udupi districts.

4.1.5.3 Percentage of livestock insured under schemes

The number of livestock insured was compared with the population and analysed species-wise, the percentage of livestock thus covered by insurance under schemes is presented in Table 13 and Table 14. A perusal of Table 14 revealed that 2.14 per cent of the total livestock (cattle, buffaloes, sheep, goats, and pigs) of the state was covered under insurance during 2019-20 while the state coverage was improved to 2.81 per cent during 2020-21. The percentage of livestock covered was highest in Bengaluru

Table 12: Meat animals insured under schemes

Sl. No		Districts	Pig	Sheep and goat				
			DAHVS	DAHVS	KSWDC		Total	
			2020-21	2020-21	2019-20	2020-21	2019-20	2020-21
1	Bengaluru Division	Bengaluru Urban	120	77	165	56	165	133
2		Bengaluru Rural	40	110	88	56	88	166
3		Ramanagara	40	143	88	56	88	199
4		Kolar	320	253	187	112	187	365
5		Chikkaballapura	180	319	165	112	165	431
6		Tumakuru	280	660	253	168	253	828
7		Shivamogga	20	55	132	56	132	111
8		Davangere	0	264	231	112	231	376
9		Chitradurga	0	704	242	168	242	872
			1000	**2585**	**1551**	**896**	**1551**	**3481**
10	Mysuru Division	Mysuru	140	209	242	56	242	265
11		Mandya	120	363	121	112	121	475
12		Hassan	200	165	143	56	143	221
13		Chikkamagaluru	160	55	110	56	110	111
14		Kodagu	800	0	44	0	44	0
15		Dakshina Kannada	60	22	77	0	77	22
16		Udupi	40	55	44	0	44	55
17		Chamarajanagar	40	154	132	56	132	210
			1560	**1023**	**913**	**336**	**913**	**1359**
18	Belagavi Division	Belagavi	140	649	308	168	308	817
19		Dharwad	0	77	99	56	99	133
20		Haveri	20	220	121	56	121	276
21		Gadag	0	275	88	112	88	387
22		Uttara Kannada	60	22	55	0	55	22
23		Vijayapura	0	506	176	112	176	618
24		Bagalkot	0	484	143	112	143	596
			220	**2233**	**990**	**616**	**990**	**2849**
25	Kalaburagi Division	Ballari	40	495	352	168	352	663
26		Raichur	120	407	385	112	385	519
27		Koppal	20	308	308	112	308	420
28		Kalaburagi	60	308	253	112	253	420
29		Bidar	0	484	231	329	231	813
30		Yadgir	20	341	264	112	264	453
			260	**2343**	**1793**	**945**	**1793**	**3288**
		Total	**3040**	**8184**	**5247**	**2793**	**5247**	**10977**

division during 2019-20 (5.31%) and 2020-21 (6.12%), followed by Mysuru, Kalaburagi and Belagavi (0.15% and 0.33% respectively) divisions.

Division-wise analysis of Table 13 unveiled that the percentage of cattle and buffaloes covered by insurance during 2019-20 and 2020-21 was highest in Bengaluru division (15.75% and 18.08% respectively), followed by Mysuru, Kalaburagi and Belagavi divisions. The percentage coverage of sheep and goats during both years was highest in Mysuru (0.05% and 0.07%) division, followed by Kalaburagi, Bengaluru and Belagavi divisions. Pigs were not insured during 2019-20. The percentage coverage of pigs during 2020-21 was highest in Mysuru (3.93%) division, followed by Bengaluru, Belagavi and Kalaburagi divisions.

A detailed study of Table 13 shows that the highest percentage cover of cattle and buffaloes under insurance during 2019-20 and 2020-21 was observed in Bengaluru Rural district (41.24% and 41.24%). Other better-performing districts include Ramanagara (36.18% and 39.72%), Chikkaballapura (23.25% and 23.49%), Bengaluru Urban (21.75% and 36.02%), Kolar (21.12% and 22.79%) Tumakuru (18.69% and 23.96%) and Mandya (14.07% and 17.89%). The percentage of cattle and buffalo insured during 2019-20 was below 0.5 per cent in Haveri, Kalaburagi, Gadag, Vijayapura, Dharwad, Chikkamagaluru, Bagalkot, Belagavi, Hassan and Uttara Kannada districts. But during 2020-21 the percentage was less than 0.5 per cent in Kodagu, Vijayapura, Uttara Kannada, Kalaburagi, Bidar and Yadgir districts.

The percentage of sheep and goats insured during 2019-20 was highest in Udupi (1.42%), followed by Kodagu (0.53%), Uttara Kannada (0.29%), Dakshina Kannada

Table 13: Per cent of livestock insured under schemes (district-wise)

Sl. No		Districts	Cattle and Buffalo		Sheep and Goat		Pigs	
			2019-20	2020-21	2019-20	2020-21	2019-20	2020-21
1	Bengaluru Division	Bengaluru Urban	21.75	36.02	0.11	0.09	0.00	0.43
2		Bengaluru Rural	41.24	41.24	0.04	0.08	0.00	0.28
3		Ramanagara	36.18	39.72	0.03	0.07	0.00	0.56
4		Kolar	21.12	22.79	0.03	0.06	0.00	6.05
5		Chikkaballapura	23.25	23.49	0.02	0.05	0.00	7.26
6		Tumakuru	18.69	23.96	0.01	0.05	0.00	4.70
7		Shivamogga	2.24	2.66	0.13	0.11	0.00	0.32
8		Davangere	2.72	2.64	0.07	0.12	0.00	0.00
9		Chitradurga	4.36	3.92	0.01	0.05	0.00	0.00
			15.75	**18.08**	**0.03**	**0.06**	**0.00**	**1.36**
10	Mysuru Division	Mysuru	6.61	8.77	0.06	0.06	0.00	1.91
11		Mandya	14.07	17.89	0.02	0.07	0.00	1.28
12		Hassan	0.22	0.94	0.04	0.07	0.00	10.28
13		Chikkamagaluru	0.33	0.65	0.08	0.08	0.00	11.24
14		Kodagu	0.79	0.47	0.53	0.00	0.00	9.56
15		Dakshina Kannada	2.26	10.48	0.24	0.07	0.00	0.94
16		Udupi	1.77	7.96	1.42	1.77	0.00	1.22
17		Chamarajanagar	0.50	7.85	0.05	0.08	0.00	2.54
			4.12	**7.33**	**0.05**	**0.07**	**0.00**	**3.93**
18	Belagavi Division	Belagavi	0.27	0.72	0.02	0.06	0.00	0.64
19		Dharwad	0.36	0.54	0.06	0.09	0.00	0.00
20		Haveri	0.49	1.09	0.03	0.06	0.00	0.60
21		Gadag	0.46	1.18	0.01	0.07	0.00	0.00
22		Uttara Kannada	0.21	0.33	0.29	0.11	0.00	5.03
23		Vijayapura	0.46	0.39	0.02	0.07	0.00	0.00
24		Bagalkot	0.33	0.69	0.01	0.06	0.00	0.00
			0.33	**0.69**	**0.02**	**0.06**	**0.00**	**0.26**
25	Kalaburagi Division	Ballari	0.59	2.43	0.02	0.04	0.00	0.26
26		Raichur	0.79	0.96	0.04	0.06	0.00	0.73
27		Koppal	0.58	2.63	0.04	0.05	0.00	0.23
28		Kalaburagi	0.49	0.15	0.05	0.08	0.00	0.14
29		Bidar	0.76	0.02	0.09	0.30	0.00	0.00
30		Yadgir	0.53	0.01	0.04	0.07	0.00	0.10
			0.62	**1.10**	**0.04**	**0.07**	**0.00**	**0.21**
		Total	**5.38**	**6.98**	**0.03**	**0.06**	**0.00**	**0.94**

Table 14: Per cent of livestock insured under schemes (division-wise)

Sl. No	Division	Total livestock population (no's)	Total livestock insured (no's)		Per cent of livestock covered (%)	
			2019-20	2020-21	2019-20	2020-21
1	Bengaluru	8982484	476840	549920	5.31	6.12
2	Mysuru	4756226	117008	209728	2.46	4.41
3	Belagavi	8098402	12250	26459	0.15	0.33
4	Kalaburagi	7160408	15368	27746	0.21	0.39
	Total	**28997520**	**621466**	**813853**	**2.14**	**2.81**

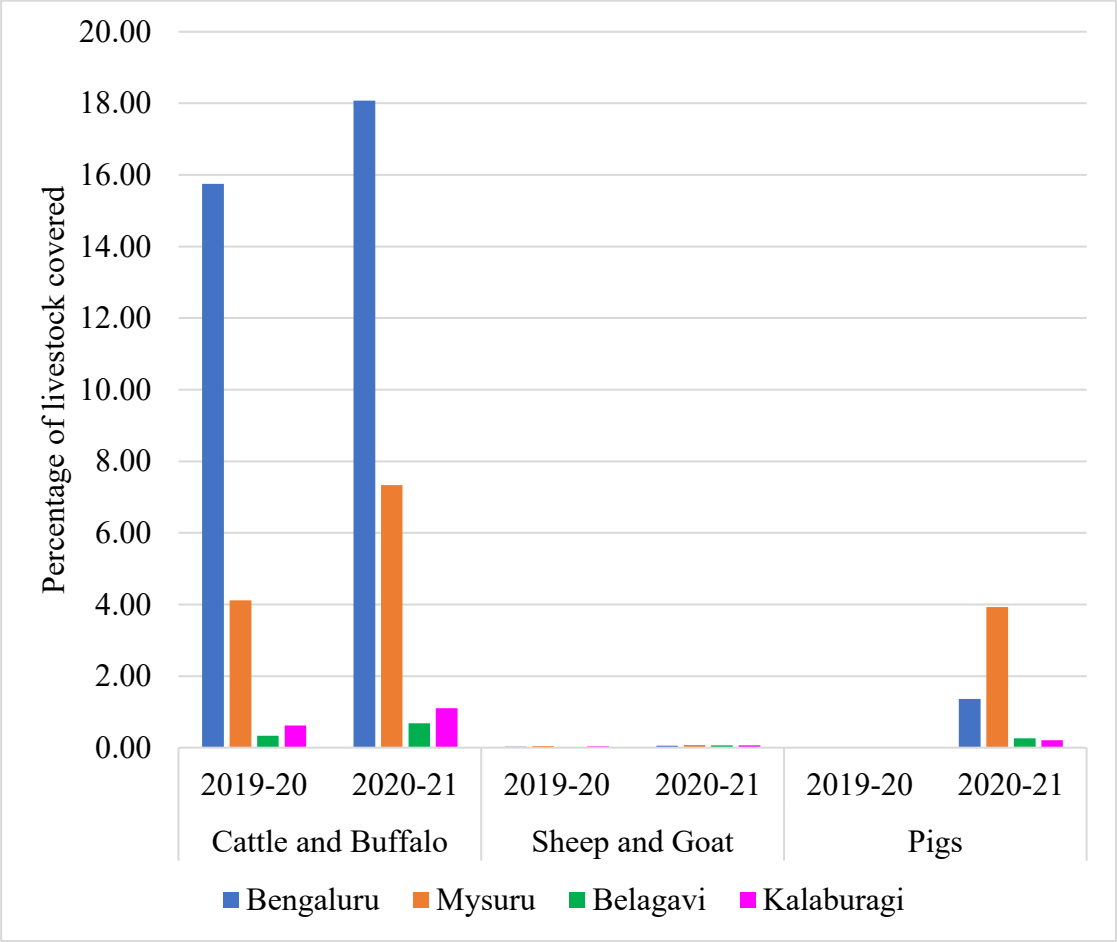

Fig 4: Livestock covered (%) under schemes in Karnataka

(0.24%), Shivamogga (0.13%), Bengaluru Urban (0.11%) districts. But it was 0.01 per cent in Tumakuru, Chitradurga, Gadag and Bagalkot districts. During 2020-21 sheep and goat insurance the percentage was highest in Udupi (1.77%), followed by Bidar (0.30%), Davangere (0.12%), Uttara Kannada (0.11%), Shivamogga (0.11%). It was 0.05 per cent in Koppal, Chikkaballapura, Tumakuru, Chitradurga districts, 0.04 per cent in Ballari and least in Kodagu (0.00%) district.

The percentage of pigs insured during 2020-21 was highest in Chikkamagaluru (11.24%) district, followed by Hassan (10.28%), Kodagu (9.56%), Chikkaballapura (7.26%) and Kolar (6.05%) and it was least (0.00%) in Bidar, Davangere, Dharwad, Vijayapura, Gadag, Bagalkot and Chitradurga districts.

4.1.5.4 Trend in number of livestock insured under NLM in Karnataka

A perusal of Table 15 revealed that since the inception of NLM during 2006-07 the number of insured livestock showed an upward trend peaking during 2015-16 (2,36,332) and downward trend followed with 20555 livestock insured during 2020-21.

4.2 SOCIO-ECONOMIC PROFILE OF LIVESTOCK FARMERS

Distribution of farmers based on their socio-economic profile is presented in Table 16 and results of each profile characters are explained below under corresponding headings

4.2.1 Age: The farmers in the study area were categorized into three age groups namely young, middle and old aged groups. Perusal of Table 16 revealed that majority of the farmers were middle-aged (51%), followed by old- aged (27%) and young aged (22%) in the pooled sample, while majority of the farmers were middle-aged (56%) followed

Table 15: Number of livestock insured under NLM in Karnataka (year-wise)

Year	Animal insured (no.)
2006-07	9487
2007-08	13853
2008-09	14235
2009-10	16043
2010-11	67877
2011-12	79315
2012-13	80000
2013-14	73002
2014-15	31400
2015-16	236332
2016-17	92166
2017-18	165451
2018-19	93038
2019-20	46869
2020-21	20555

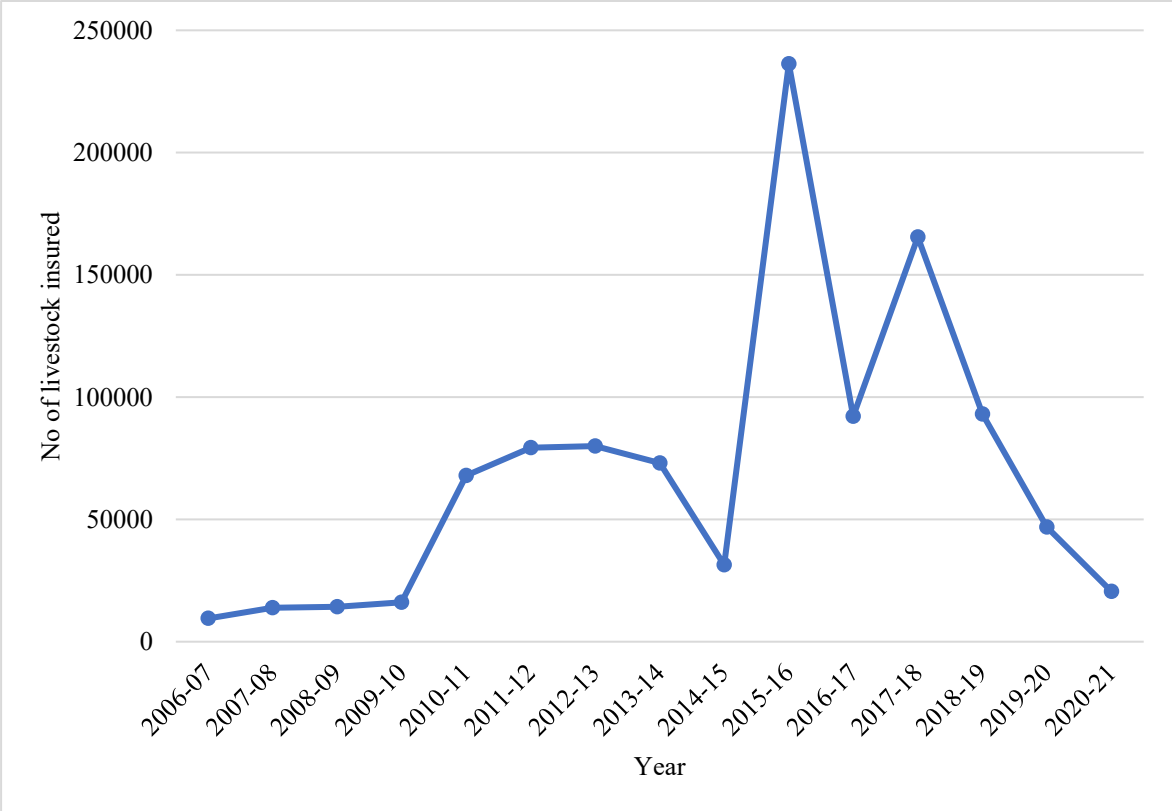

Fig 5: Trend in livestock insurance in Karnataka under NLM

Table 16: Distribution of farmers based on their socio-economic characters

Sl. No	Parameters	Adopters (n=100)	Non-adopters (n=100)	Total (N=200)	
				N	%
1	**Age**				
	Young (20-39)	25	19	44	22.0
	Middle (40-58)	56	46	102	51.0
	Old (59-77)	19	35	54	27.0
2	**Sex**				
	Male	77	94	171	85.5
	Female	23	6	29	14.5
3	**Education**				
	Illiterate	20	48	68	34.0
	Primary	19	13	32	16.0
	Middle	10	12	22	11.0
	High school	28	15	43	21.5
	PUC	8	7	15	7.5
	Graduate and above	15	5	20	10.0
4	**Family Type**				
	Joint	52	63	115	57.5
	Nuclear	48	37	85	42.5
5	**Family size**				
	Small (2-8)	91	82	173	86.5
	Medium (9-15)	6	11	17	8.5
	Large (16-22)	3	7	10	5.0
6	**Primary occupation**				
	Animal Husbandry	64	63	127	63.5
	Agriculture	29	35	64	32.0
	Salaried	2	1	3	1.5
	Business	3	1	4	2.0
	Agricultural labour	2	0	2	1.0
7	**Secondary occupation**				
	Animal Husbandry	37	35	72	36.0
	Agriculture	40	33	73	36.5
	Salaried	4	3	7	3.5
	Business	7	6	13	6.5
	Agricultural labour	12	23	35	17.5

8	**Land holding**				
	Landless (Nil)	24	25	49	24.5
	Marginal farmers (up to 2.50 acres)	32	37	69	34.5
	Small farmers (2.51 - 5.00 acres)	24	17	41	20.5
	Semi medium farmers (5.01 - 10.00 acres)	8	14	22	11.0
	Medium farmers (10.01 - 25.00 acres)	9	5	14	7.0
	Large farmers (>25.01 acres)	3	2	5	2.5
9	**Experience in native Livestock rearing**				
	Low (up to 20)	73	54	127	63.5
	Medium (21 to 40)	23	28	51	25.5
	High (above 40)	4	18	22	11.0
10	**Experience in cross bred livestock rearing**				
	Low (up to 7)	48	80	128	64.0
	Medium (8 to 14)	34	16	50	25.0
	High (above 14)	18	4	22	11.0
11	**Livestock possession**				
	Low (up to 7)	76	63	139	69.5
	Medium (21 to 40)	14	13	27	13.5
	High (above 40)	10	24	34	17.0
12	**Possession of high yielding dairy animals**				
	No possession	23	85	108	54.0
	Low (up to 4)	62	12	74	37.0
	Medium (5 to 8)	11	1	12	6.0
	High (above 8)	4	2	6	3.0
13	**Livestock procurement**				
	Farm born	100	100	200	100.0
	Own investment	62	53	115	57.5
	External finance	9	0	9	4.5
	Purchased under schemes	16	0	16	8.0
14	**Family income (lakh ₹ per annum)**				
	Low (up to 4)	88	94	182	91.0
	Medium (5 to 8)	9	4	13	6.5
	High (above 8)	3	2	5	2.5
15	**Social participation**				
	Nil	40	86	126	63.0
	One organization	43	11	54	27.0
	Two or more organizations	16	3	19	9.5
	Executive member	1	0	1	0.5

by young aged (25%) and old- aged (19%) in the LI adopters and among non-adopters' majority of the farmers were middle-aged (46%) followed by old- aged (35%) and young aged (19%).

4.2.2 Sex: Careful observation of Table 16 revealed that, within the pooled sample of LI adopters and non-adopters, majority were male (86%) followed by female (15%). In the LI adopters' majority were males (77%) followed by females (23%). In the LI non-adopter category majority were males (94%) again followed by female (6%).

4.2.3 Education: A perusal of Table 16 revealed that most of the pooled respondent livestock owners were Illiterate (68%) followed by high school (48%), primary (32%), middle school (22%), graduation and above (20%) and PUC (15%) of education. Majority of the LI adopters have completed high school (28%) followed by illiterates (20%), primary schooling (19%), graduation and above (15%) and PUC (8%). Almost half of the LI non- adopters were illiterate (48%), followed by high school (15%), primary schooling (13%), middle school (12%), PUC (7%) and graduation and above (5%) of education.

4.2.4 Family Type: From the Table 16 it can be noted that majority of the pooled respondents in study area had joint family (58%) followed by nuclear family (43%). Among the LI adopters' joint family holders had a slight majority (52%) over nuclear family (48%). Whereas in LI non-adopters' joint families were more (63%) compared to the nuclear family (37%).

4.2.5 Family size: As per the Table 16 out of the pooled sample of LI adopters and non- adopters, majority had small family size (87%) followed by medium (9%) and large (5%) family size. Among the LI adopters' majority had small family size (91%)

followed by medium (6%) and large (3%) family size. In non-adopters again majority had small family size (82%) followed by medium (11%) and large (7 %) family size.

4.2.6 Primary occupation: Careful observation of Table 16 revealed that, pooled sample had Animal Husbandry (64%) as their main occupation, followed by agriculture (32%), salaried and business (2% each), and agricultural labour (1%). LI adopters had animal husbandry (64%) as a main occupation, followed by agriculture (29%), business (3%) and salaried and agricultural labour (each 2%). LI non-adopters had animal husbandry (63%) as a main occupation, followed by agriculture (35%), business and salaried (1% each).

4.2.7 Secondary occupation: Table 16 unveiled that the pooled sample had agriculture (37%) as a secondary occupation followed by animal husbandry (36%), agricultural labour (18%), business (7%) salaried (4%). LI adopters had agriculture (40%) as a secondary occupation, followed by, animal husbandry (37%), agricultural labour (12%), business (7%) and salaried (4%). LI non-adopters had animal husbandry (35%) as a secondary occupation, followed by agriculture (33%), agricultural labour (23%), business (6%) and salaried (3%).

4.2.8 Land holding: Majority of the respondent livestock owners were marginal farmers (35%), followed by landless (25%), small farmers (21%), semi medium farmers (11%), medium farmers (7%), large farmers (3%) in pooled sample. Among LI adopters' majority were marginal farmers (32%), followed by landless, small farmers (each 24%), medium farmers (9%), semi medium farmers (8%), large farmers (3%). Among LI non-adopters' majority were marginal farmers (37%), followed by landless (25%), small farmers (17%), semi medium farmers (14%), medium farmers (5%), large farmers (2%).

4.2.9 Experience in native Livestock rearing: Majority of the respondent livestock owners had low experience in native livestock rearing (64%) followed by medium (26%) and high (11%) in pooled sample. Among LI adopters' majority had low experience (73%) followed by medium (23%) and high (4%). Among LI non-adopters' majority had low experience in native livestock rearing (54%) followed by medium (28%) and high (18%).

4.2.10 Experience in cross bred livestock rearing: Table 16 revealed that majority of the respondent livestock owners had low experience in cross bred livestock rearing (64%) followed by medium (25%) and high (11%) experience in cross bred livestock rearing in pooled sample. Among LI adopters' majority had low experience (48%) followed by medium (34%) and high (18%) experience in cross bred livestock rearing. Among LI non- adopters' majority had low experience in cross bred livestock rearing (80%) followed by medium (16%) and high (04%) experience in cross bred livestock rearing.

4.2.11 Livestock possession: Perusal of Table 16 revealed that majority of the respondent livestock owners had low livestock possession (69.5%) followed by high (17%) and medium (13.5%) in pooled sample. Among LI adopters 'majority had low possession (76%) followed by medium (14%) and high (10%). Among LI non-adopters' majority had low (63%) livestock possession, followed by high (24%) and medium (13%) livestock possession.

4.2.12 Possession of high yielding dairy animals: Careful study of Table 16 revealed that majority of the respondent livestock owners did not possess high yielding dairy animals (54%) followed by possession in low numbers (37%), medium numbers (6%) and high numbers (03%) in pooled sample. Among LI adopters' majority had low

possession of high yielding dairy animals (62%) followed by, no possession (23%), medium number (11%) and high number (04%) of high yielding dairy animals. Among LI non-adopters' majority had not possessed high yielding dairy animals (85%) followed by low number of high yielding dairy animals (12%), high (02%) and medium (01%) number of high yielding dairy animals.

4.2.13 Livestock procurement: Table 16 revealed that all respondent livestock owners had farm born (100%) animals, 62 per cent of the LI adopters', 53 per cent of the LI non- adopters' respondents procured animals by own investment. Nine per cent of the LI adopters procured animals through external finance while none of the LI non-adopters have procured animal by external finance resulting in 5 per cent for pooled sample. Sixteen per cent of the LI adopters purchased animals under schemes while no LI non-adopters have procured animals under schemes resulting in eight per cent for pooled sample.

4.2.14 Family income (lakh ₹ per annum): Table 16 revealed that majority of the respondent livestock owners had low family income (91%) followed by medium (7%), high (03%) in pooled sample. Among LI adopters' majority had low family income (88%) followed by medium (9%), high (03%) family income. Among LI non-adopters' majority had low family income (94%) followed by medium (04%) and high (02%) family income.

4.2.15 Social participation: A perusal of Table 16 revealed that 40 per cent of the LI adopters had no social participation while majority (86%) in LI non-adopters' category had no social participation making the result for pooled respondents to 63 per cent. 43 per cent of the LI adopters participated in single organization while it was only 11 per cent in LI non- adopters making pooled respondents to 27 per cent. 16 per cent of the

LI adopters participated in two or more organizations while it was only three per cent in LI non-adopters making pooled respondents to 10 per cent. One per cent of the LI adopters participated working as executive member while none in LI non-adopters making it to one per cent in pooled sample.

4.3 AWARENESS LEVEL AND ADOPTION OF LIVESTOCK INSURANCE

4.3.1 Information seeking behaviour of farmers

4.3.1.1 Extension participation: A perusal of Table 17 revealed that 91 per cent of the LI adopters had low extension participation while it was 99 per cent in LI non-adopters making it to 95 per cent in pooled sample. Nine per cent of the LI adopters and one per cent in LI non-adopters had medium extension participation while in pooled sample it was five per cent. None of the LI adopters and non-adopters had high extension participation.

4.3.1.2 Extension contacts: Careful study of Table 17 revealed that 97 per cent of the LI adopters and all (100%) LI non-adopters had low extension contact making it to 99 per cent for pooled respondents. Three per cent of the LI adopters and none (0%) of the LI non- adopters had medium extension contact making the result for pooled respondents to two per cent. None of the LI adopters and non-adopters had high extension participation.

4.3.1.3 Sources of information about livestock insurance: Adopters of livestock insurance gathered information from various sources which are grouped into three categories as formal, informal, and mass media and the results are presented in Table 18 and explained in the following subheadings.

Table 17: Information seeking behaviour of farmers

Sl. No	Parameters	Adopters (n=100)	Non-adopters (n=100)	Total (N=200)	
				N	%
1	**Extension participation**				
	Low (up to 7)	91	99	190	95.0
	Medium (8 - 14)	9	1	10	5.0
	High (above 14)	0	0	0	0.0
2	**Extension contacts**				
	Low (up to 6)	97	100	197	98.5
	Medium (7 - 12)	3	0	3	1.5
	High (above 12)	0	0	0	0.0

Table 18: Sources of information about livestock insurance

Sl. No	Sources	f	%
A	**Personal cosmopolites sources (Formal)**		
1	DAHVS	69	52.3
2	Milk Unions or MPCS	37	28.0
3	Bank	26	19.7
4	Insurance Company/ Agent	0	0.0
5	NGO's	0	0.0
B	**Personal localities sources (Informal)**		
1	Family members	5	12.2
2	Friends	22	53.7
3	Local leaders	0	0.0
4	Progressive farmers	14	34.1
C	**Impersonal cosmopolites sources (Mass media)**	0	0.0

4.3.1.3.1 Personal cosmopolites sources (Formal): Out of the formal sources majority of the insurance adopters received information from the DAHVS (52.3%) followed by MPCS or Milk unions (28%) and banks (19.7%). From the insurance company agents and NGO's no Information regarding LI was not acquired.

4.3.1.3.2 Personal localities sources (Informal): Out of informal sources majority of the adopters of livestock insurance received information from their friends (53.7%) followed by progressive farmers (34.1%), family members (12.2%). No information was acquired from local leaders.

4.3.1.3.3 Impersonal cosmopolites sources (Mass media): No information was acquired from mass media about the LI by the LI adopters.

4.3.2 Awareness level of livestock farmers on livestock insurance

Results on the awareness level of livestock farmers on livestock insurance are presented in Table 19 categorised under three different stages of availing and settlement of livestock insurance

4.3.2.1 General awareness on livestock insurance: All the LI adopters (100%) and non- adopters (100%) were aware that "livestock can be insured". Majority of the LI adopters (99%) were aware, but only 33 per cent of the LI non-adopters were aware that "insurance is mandatory for livestock procured under loans or schemes". All (100%) the LI adopters were aware and 84 per cent of the LI non-adopters were aware that "premium amount must be paid to avail livestock insurance". Majority of the LI adopters (96%) were aware, but only 06 per cent of the LI non-adopters were aware that "premium subsidy is provided under Government and Milk Union schemes".

4.3.2.2 Awareness on procedures in availing livestock insurance: Most (99%) of the LI adopters were aware and 81 per cent of the LI non-adopters were aware that "livestock insurance can be directly purchased from insurance companies or facilitated through bank/ Veterinarian/ MPCS". Majority of the LI adopters (87%) were aware, but only 11 per cent of the LI non-adopters were aware on the statement "livestock insurance can be purchased for different indemnity periods (1/2/3/5 years)". Majority of the LI adopters (71%) were aware, but only 11 per cent of the LI non-adopters were aware about the fact that "premium rates depend upon the market value of livestock and indemnity period".

Table 19: Awareness level of livestock farmers on livestock insurance (statement-wise)

Sl. No	Statements	Adopters n=100 (%)	Non-adopters n=100 (%)
A	**General awareness on livestock insurance**		
1	Livestock can be insured	100	100
2	Insurance is mandatory for livestock procured under loans or schemes	99	33
3	Premium amount must be paid to avail livestock insurance	100	84
4	Premium subsidy is provided under Government and Milk Union schemes	96	6
B	**Awareness on procedures in availing livestock insurance**		
1	Livestock insurance can be directly purchased from insurance companies or facilitated through bank/ Veterinarian/ MPCS	99	81
2	Livestock insurance can be purchased for different indemnity periods (1/2/3/5 years)	87	11
3	Premium rates depend upon the market value of livestock and indemnity period	71	11
4	Insuring for long term at a time is more beneficial than, insuring or renewing every year	70	10
5	The sum insured is based upon the valuation made by the authorized Veterinarian	98	27
6	A health certificate issued by the authorized Veterinary doctor is a mandatory document	100	21
7	Ear tagging is mandatory for livestock insurance	100	93
8	The risk period starts 15 days from the payment of premium and submission of essential documents to the insurance office	19	3
9	Regular payment of the premium within the due date is mandatory for the continuation of livestock insurance	61	2
10	There is an option to cover the permanent total disability of the livestock and also death during transit under insurance	2	1
11	Do you know the name of the insurance company from which you have availed livestock insurance	5	NA
C	**Awareness on claim procedures**		
1	Livestock insurance can be claimed on death of the insured animal	100	95
2	Animal death should be informed to the insurance agency within 24 hours	96	5
3	PM must be conducted by the authorized Veterinarian, and he should issue a PM report	100	81
4	Insurance can also be claimed for permanent total disability of the animal and death during transit	2	1
5	Treatment certificate and prognosis must be given by the authorized Veterinarian for PTD claim	0	1
6	The claim can be rejected during the situations like preventable risks (diseases)	3	1
7	Do you know the ear tag is must, at the time of settlement (NO TAG NO CLAIM)	100	66

70 per cent of the LI adopters were aware, but only ten per cent of the LI non-adopters were aware that “insuring for long term at a time is more beneficial than, insuring or renewing every year”. Most (98%) of the LI adopters were aware whereas 27 per cent of the LI non-adopters were aware “the sum insured is based upon the valuation made by the authorized Veterinarian”. All (100%) the LI adopters were aware but only 21 per cent of the LI non-adopters were aware that “a health certificate issued by the authorized Veterinary doctor is a mandatory document”. All (100%) the LI adopters were aware and 93 per cent of the LI non-adopters were aware that “ear tagging is mandatory for livestock insurance”. Only 19 per cent and 03 per cent of the LI adopters and non-adopters were aware respectively on the statement that “the risk period starts 15 days from the payment of premium and submission of essential documents to the insurance office”. Majority of the LI adopters (61%) were aware, only two per cent of the LI non-adopters were aware of the fact that “regular payment of the premium within the due date is mandatory for the continuation of livestock insurance”. Only two per cent and one per cent of the LI adopters and non-adopters were aware respectively about the statement “there is an option to cover the permanent total disability of the livestock and also death during transit under insurance”. Only five per cent of the LI adopters were aware about the name of the insurance company from which you have availed livestock insurance.

4.3.2.3 Awareness on claim procedures: All (100%) the LI adopters were aware and 95 per cent of the LI non-adopters were aware that “livestock insurance can be claimed on death of the insured animal”. Majority of the LI adopters (96%) were aware, but only five per cent of the LI non-adopters were aware that “animal death should be informed to the insurance agency within 24 hours”. All (100%) the LI adopters were aware and 81 per cent of the LI non-adopters were aware that “PM must be conducted

by the authorized Veterinarian, and he should issue a PM report". Only two per cent and one per cent of the LI adopters and non- adopters were aware respectively about the fact that "insurance can also be claimed for permanent total disability of the animal and death during transit". No one among the LI adopters and only one per cent in non-adopters were aware that "treatment certificate and prognosis must be given by the authorized Veterinarian for PTD claim". Only three per cent and one per cent of the LI adopters and non-adopters were aware respectively about the fact that "the claim can be rejected during the situations like preventable risks (diseases)". All (100%) of the LI adopters were aware, and 66 per cent of the LI non-adopters were aware of the fact that "ear tag is must, at the time of settlement (NO TAG NO CLAIM)".

4.3.2.4 Awareness level (overall) of livestock farmers on livestock insurance: Overall awareness level of the livestock farmers on livestock insurance categorised under three different stages of availing and settlement of livestock insurance is presented in class interval, frequency and percentage in the Table 20 and explained in the following subheadings.

4.3.2.4.1 General awareness on livestock insurance: Every respondent LI adopter and non-adopters had at least minimum level of awareness. i.e. none with no awareness from both categories. Fourteen per cent of the non-adopters had low awareness while none in the low-level awareness category in LI adopters. Majority (81%) of the LI non-adopters and five per cent adopters had medium level of awareness. 95 per cent of the LI adopters and only five per cent of the LI non-adopters had high level of awareness.

4.3.2.4.2 Awareness on procedures in availing livestock insurance: Two per cent of the LI non-adopters and none in the LI adopters were having "no awareness" while 81 per cent of the LI non-adopters and one per cent in the LI adopters were having "low

awareness". 15 per cent of the LI non-adopters and 66 per cent in the LI adopters were having "medium awareness" but only two per cent of the LI non-adopters and 33 per cent in the LI adopters were having "high awareness".

Table 20: Awareness level (overall) of livestock farmers on livestock insurance

Sl. No	Categories	Adopters n= 100 (%)	Non-adopters n=100 (%)
A	**General awareness on livestock insurance**		
1	No awareness	0	0
2	Low (1)	0	14
3	Medium (2-3)	5	81
4	High (above 3)	95	5
B	**Awareness on procedures in availing livestock insurance**		
1	No awareness	0	2
2	Low (1-3)	1	81
3	Medium (4-7)	66	15
4	High (above 8)	33	2
C	**Awareness on claim procedures**		
1	No awareness	0	1
2	Low (1-2)	0	44
3	Medium (3-5)	100	55
4	High (above 6)	0	0

4.3.2.4.3 Awareness on claim procedures: One per cent of the LI non-adopters and none in the LI adopters were having "no awareness" while, 44 per cent of the LI non-adopters and none in the LI adopters were having "low awareness". 55 per cent of the LI non-adopters and all (100%) of the LI adopters were having "medium awareness" but neither the LI adopters nor the non-adopters belonged to the "high awareness".

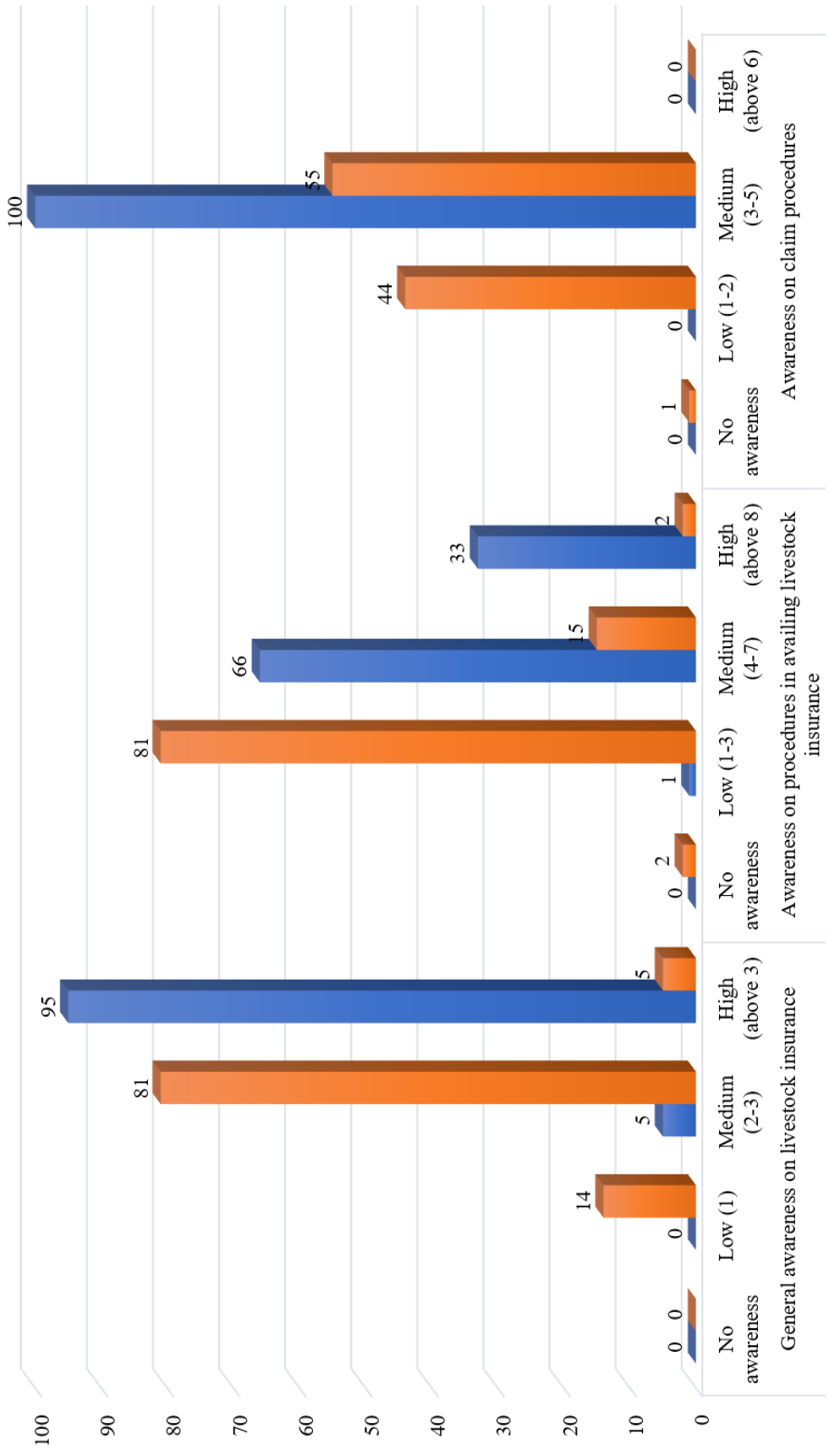

Fig 6: Awareness level of livestock insurance

4.3.3 Adoption of livestock insurance:

4.3.3.1 Factors influencing the adoption of livestock insurance: Information on the factors influencing adoption of livestock insurance was collected from the LI adopters and were ranked by using Henry Garrett technique. Perusal of Table 21 revealed that the most important factor that influenced adoption was awareness and knowledge acquired by training and motivation by extension contacts (Average score 68.53) followed by positive personal and community experiences regarding livestock insurance (58.57), cannot afford loss of livestock as they provides economic stability to the farmers livelihood (55.89), motivation by friends and community (54.08), premium amount is affordable due to the DAHVS or milk union insurance schemes (53.09), exotic breed or breed from far away home tract- and sensitive animals being reared (52.81), high purchase cost of the animal – claim amount can help in the purchase of replacement stock (47.75), high productive animals – in case of loss at least claim amount can be a compensation (40.96), compulsion for being selected as beneficiary in livestock scheme or subsidy (13.22), presence of insurance agents or bankers at rural and block level or in the vicinity (9.31), compulsion for availing loan for livestock farm project (5.33), disease prone locale (3.65) and poor animal health services in the locale (1.7).

4.3.3.2 Number of livestock insured: Detailed observation of Table 22 revealed that only, two native cattle each in Bengaluru, Belagavi, Kalaburagi division have been insured and in Mysuru no native cattle were insured totalled to only six native cattle insured by the 100 respondents in study area. But 119 crossbred cattle were insured in Bengaluru, followed by Mysuru (49), Kalaburagi (44), and Belagavi (19) by the

Table 21: Factors influencing the adoption of livestock insurance

(n=100)

Sl. No	Factors	Total Scores	Average scores	Rank
1	Motivation by friends and community	5408	54.08	IV
2	Awareness and knowledge acquired by training and motivation by extension contacts	6853	68.53	I
3	Positive experiences regarding livestock insurance – personal and community	5857	58.57	II
4	Livestock provides economic stability to the farmers' livelihood – cannot afford the loss of animals	5589	55.89	III
5	High purchase cost of animals – claim amount can help in the purchase of replacement stock	4775	47.75	VII
6	High productive animals– in case of loss at least claim amount can be a compensation	4096	40.96	VIII
7	Breed of the animal – Exotic/ faraway home tract-sensitive animals	5281	52.81	VI
8	Disease prone locale	365	3.65	XII
9	Mandatory to avail loan for livestock farm project	533	5.33	XI
10	Mandatory on being selected as a beneficiary in livestock scheme/ subsidy	1322	13.22	IX
11	Presence of insurance agents/bankers at rural and block-level/ in the vicinity	931	9.31	X
12	Poor animal health services in the locale	170	1.7	XIII
13	Premium amount is affordable due to the DAHVS or milk union insurance schemes	5309	53.09	V

selected respondents totalling to 231 crossbred cattle insured by the 100 respondents in study area. A total of 22 native buffaloes in Belagavi, one in Bengaluru and none in Kalaburagi and Mysuru division were insured amounting to 23, while 33 crossbred or graded buffaloes were insured in Belagavi and three in Bengaluru and none in Mysuru and Kalaburagi amounting to 36 graded buffalo by the respondent LI adopters in the study area.

It can be noted that 117 native sheep in Kalaburagi, 14 in Bengaluru and 13 in Mysuru and none in Belagavi division were insured amounting to 144, while 81 cross bred sheep were insured in Bengaluru and none in Belagavi, Mysuru and Kalaburagi division by the respondent LI adopters in the study area.

Twenty native goats in Belagavi followed by, 14 each in Bengaluru and Mysuru and none in Kalaburagi division were insured amounting to 48, while 30 crossbred goats insured in Bengaluru and none in Belagavi, Mysuru and Kalaburagi division by the respondent LI adopters in the study area.

No native pigs were insured and only ten cross bred pigs were insured in Belagavi and none insured in Bengaluru, Mysuru and Kalaburagi division by the respondent LI adopters in the study area.

4.3.3.3 Reason for insuring livestock: Perusal of Table 23 revealed that in Bengaluru division out of 25 LI adopters 20 livestock owners adopted LI realizing LI as risk transfer and five adopted as it was mandatory for scheme or loans. In Mysuru division out of 25 LI adopters 22 adopted LI realizing LI as risk transfer and three adopted as it was mandatory for scheme or loans. 22 out of 25 LI adopters adopted LI realizing LI as risk transfer and three adopted as it was mandatory for scheme or loans in Belagavi

Table 22: Species-wise distribution of livestock insured

Sl. No	Species	Type	Division				Total
			Bengaluru	Mysuru	Belagavi	Kalaburagi	
1	Cattle	Native	2	0	2	2	6
		CB	119	49	19	44	231
		Total	**121**	**49**	**21**	**46**	**237**
2	Buffalo	Native	1	0	22	0	23
		CB	3	0	33	0	36
		Total	**4**	**0**	**55**	**0**	**59**
3	Sheep	Native	14	13	0	117	144
		CB	81	0	0	0	81
		Total	**95**	**13**	**0**	**117**	**225**
4	Goat	Native	14	14	20	0	48
		CB	30	0	0	0	30
		Total	**44**	**14**	**20**	**0**	**78**
5	Pig	Native	0	0	0	0	0
		CB	0	0	10	0	10
		Total	**0**	**0**	**10**	**0**	**10**

Table 23: Reasons for insuring livestock – farmers' perspective (adopters)

Sl. No	Division	Risk transfer	Mandatory for scheme or loan	n
1	Bengaluru	20	5	25
2	Mysuru	22	3	25
3	Belagavi	22	3	25
4	Kalaburagi	13	12	25
	Total	**77**	**23**	**100**

division. In Kalaburagi division 13 out of 25 LI adopters adopted LI realizing LI as risk transfer and 12 adopted as it was mandatory for scheme or loans. Overall, out of 100 LI adopters 77 livestock owners adopted LI realizing LI as risk transfer and 23 adopted as it was mandatory for scheme or loans.

4.3.3.4 Sources of LI: Detailed study of Table 24 revealed that in Bengaluru division 16 livestock owners availed LI through milk unions followed by seven from DAHVS, five from banks. But none availed through insurance company/ agent or by own efforts. In Mysuru division 16 livestock owners availed LI through milk unions followed by five each from DAHVS and banks. None availed directly from insurance company/ agent or by own efforts. In Belagavi division 11 livestock owners availed LI through DAHVS followed by, nine from milk unions and five from banks. None availed through insurance company/ agent or by own efforts. In Kalaburagi division 11 livestock owners availed LI through banks followed by, nine from DAHVS and eight from milk unions. None availed through insurance company/ agent or by own efforts.

Overall, 49 livestock owners availed LI through milk unions followed by, 32 from DAHVS and 26 from banks. None availed through insurance company/ agent or by own efforts.

4.3.3.5 Experience in LI: A perusal of Table 25 revealed that in Bengaluru division none of the LI adopters had high experience, among the adopters who insured through milk unions five had medium experience and 11 had low experience. Low experience was also observed in five and seven of the adopters facilitated by bank and DAHVS respectively.

Table 24: Sources of livestock insurance availed

Sl. No	Division	DAHVS	Milk Unions	Bank	Insurance Company/ Agent	Own efforts
1	Bengaluru	7	16	5	0	0
2	Mysuru	5	16	5	0	0
3	Belagavi	11	9	5	0	0
4	Kalaburagi	9	8	11	0	0
	Total	**32**	**49**	**26**	**0**	**0**

(Multiple sources)

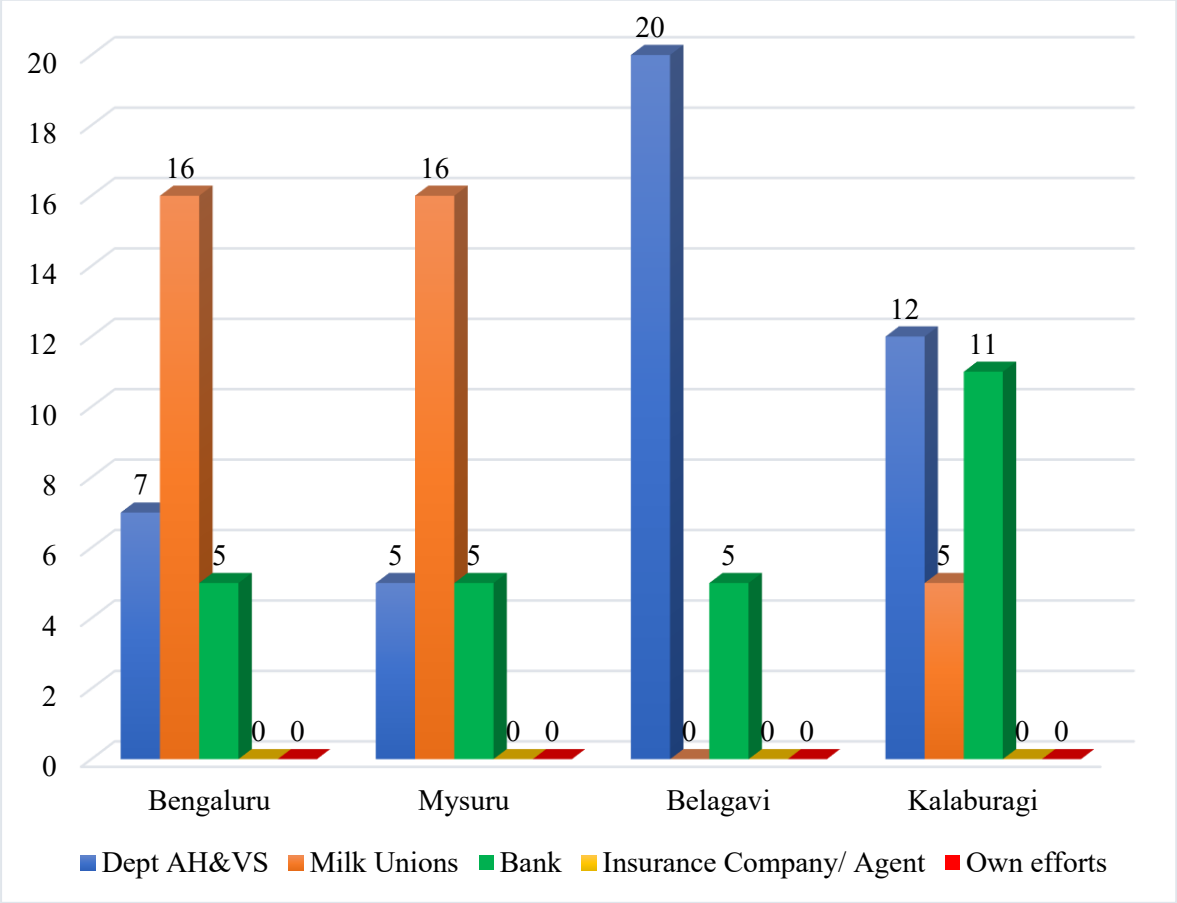

Fig 7: Sources of livestock insurance availed

In Mysuru division none of the LI adopters had high experience, among the adopters who insured through milk unions five had medium experience and 11 had low experience. Among the adopters who insured through bank one had medium experience and four had low experience. Low experience was also observed in five of the adopters facilitated by DAHVS.

In Belagavi division none of the LI adopters had high experience, among the adopters who insured through DAHVS five had medium experience and six had low experience. Among the adopters who insured through bank five had low experience. Nine LI adopters who had insured their livestock through milk unions had low experience.

In Kalaburagi division among the adopters who insured through bank four had high experience, five had medium experience and two had low experience. Among the adopters who insured through DAHVS one had high experience, five had medium experience and three had low experience. Among the adopters who insured through milk unions none had high or medium experience while eight had low experience.

Overall, among the adopters who insured through bank four had high experience, six had medium experience and 16 had low experience. Among the adopters who insured through DAHVS one had high experience, 10 had medium experience and 21 had low experience. Among the adopters who insured through milk unions none had high experience, 12 had medium experience while 37 had low experience.

Table 25: Experience in livestock insurance

Sl. No	Division	Experience (years)	Facilitated by (no's)		
			Bank	Milk Unions	DAHVS
1	Bengaluru	Low (1-2)	5	11	7
		Medium (3-4)	0	5	0
		High (above 4)	0	0	0
2	Mysuru	Low (1-2)	4	9	5
		Medium (3-4)	1	7	0
		High (above 4)	0	0	0
3	Belagavi	Low (1-2)	5	9	6
		Medium (3-4)	0	0	5
		High (above 4)	0	0	0
4	Kalaburagi	Low (1-2)	2	8	3
		Medium (3-4)	5	0	5
		High (above 4)	4	0	1
5	Total	Low (1-2)	16	37	21
		Medium (3-4)	6	12	10
		High (above 4)	4	0	1
		Total	26	49	32

(**Multiple sources)**

4.3.3.6 Renewal of LI: Detailed observation of Table 26 revealed that in Bengaluru and Mysuru division 12 and 11 farmers who adopted LI facilitated by milk unions had renewed LI respectively and none renewed LI facilitated DAHVS and banks. While in Belagavi division none of the LI adopter respondents had renewed LI. Whereas, in Kalaburagi division only one farmer who adopted LI, facilitated by bank had renewed LI and none renewed LI facilitated by DAHVS and milk unions.

Overall, 23 farmers who adopted LI, facilitated by milk unions had renewed LI followed by one farmer facilitated by bank and none renewed LI facilitated by DAHVS in the study area.

4.3.3.7 Level of satisfaction among the livestock farmers about LI: The level of satisfaction among livestock farmers about livestock insurance was calculated by weighted mean score and ranked accordingly. A perusal of Table 27 revealed that the level of satisfaction was highest and ranked first for "timely visits done by the implementing officers at all stages of insuring and claiming" (weighted mean score– 0.595), followed by, "guidance and support by scheme officers/ bankers/ insurance agents at all stages" (0.58), "terms and conditions of insurance policy" (0.35), "livestock insurance premium rate" (0.335), "coverage of risks of livestock insurance policies" (0.135), "ease of purchasing livestock insurance and its renewal" (0.08) and last rank was for "claim procedure – ease and quickness" (0.025).

4.3.3.8 Relationship between Socio economic and psychological characteristics of livestock farmers and adoption of livestock insurance: Careful study of Table 28 revealed that education (0.279), social participation (0.443), extension participation (0.341), extension contacts (0.438) are positively

Table 26: Renewal pattern of livestock insurance (division-wise)

Sl. No	Division	Facilitated by			Total
		Bank	Milk Unions	DAHVS	
1	Bengaluru	0	12	0	12
2	Mysuru	0	11	0	11
3	Belagavi	0	0	0	0
4	Kalaburagi	1	0	0	1
		1	**23**	**0**	**24**

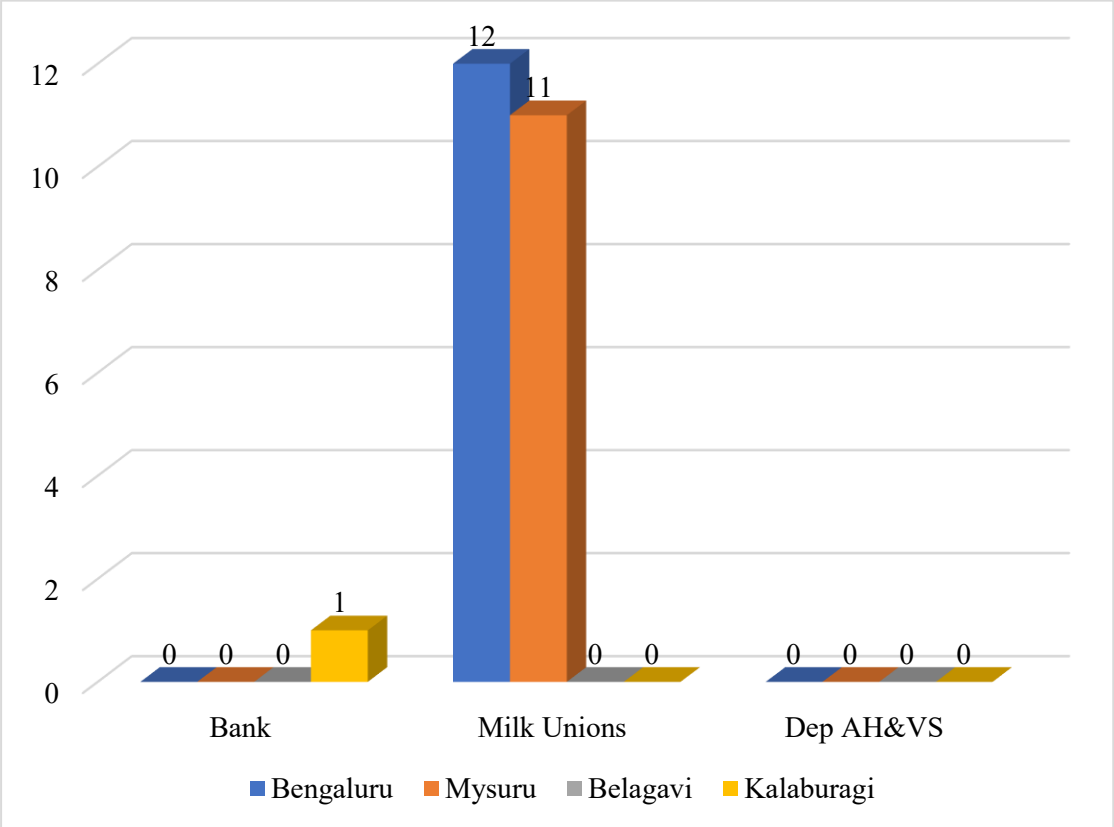

Fig 8: Renewal pattern of livestock insurance

Table 27: Level of satisfaction among livestock farmers about livestock insurance

Sl. No	Particulars	Highly satisfied	Satisfied	Not satisfied	Weighted Mean	Rank
1	Livestock insurance premium rate	25	17	58	0.335	IV
2	Ease of purchasing livestock insurance and its renewal	0	16	84	0.08	VI
3	Terms and conditions of insurance policy	0	70	30	0.35	III
4	Guidance and support by scheme officers/ bankers/ insurance agents at all stages	16	84	0	0.58	II
5	Timely visits done by the implementing officers at all stages of insuring and claiming	19	81	0	0.595	I
6	Claim procedure – ease and quickness	1	3	96	0.025	VII
7	Coverage of risks of livestock insurance policies	1	25	74	0.135	V
n=100, (adopters)						

corelated with adoption of livestock insurance at 1 per cent level of significance while, family total income (0.146) is positively corelated with adoption of livestock insurance at 5 per cent level of significance.

Family size (-0.141) is negatively corelated with LI adoption at 5 per cent and 1 per cent level of significance respectively. Age (-0.085) and rainfed land holding (-0.031) are negatively correlated and non-significant.

Further, primary awareness on LI (0.843), awareness on insurance purchase (0.819), awareness on claim settlement (0.796) were positively corelated with the adoption of livestock insurance at 1 per cent level of significance.

4.3.3.9 Relationship between type of dairy animal possession and adoption of livestock insurance: A perusal of Table 29 revealed that cross breed cattle possession is positively corelated (0.993) with adoption of cross breed cattle insurance at 1 per cent level of significance. Whereas for native cattle possession to native cattle insurance (-0.25), native buffalo possession to native buffalo insurance (-0.106) the correlation was negative and non-significant. Graded buffalo possession to graded buffalo insurance showed positive correlation (0.674) but non-significant.

4.4 Constraint analysis of livestock insurance

4.4.1 Constraints in livestock insurance: Data on constraints in livestock insurance for the livestock farmers, veterinarians, bankers and insurance agency staff was collected under general constraints, constraints in availing/ implementing LI, constraints in settlement of claim categories. The data was analysed and the constraints were ranked and presented in the tables and explained in the subheadings below.

Table 28: Relationship between Socio-economic and psychological characteristics of livestock farmers and adoption of livestock insurance

Sl. No	Factors	Adoption of insurance
1	Age	-0.085
2	Education	0.279**
3	Family type	0.111
4	Family size	-0.141*
5	AH as Primary Occupation	0.070
6	AH as subsidiary Occupation	-0.007
7	Land holding (rainfed)	0.007
8	Land holding (irrigated)	-0.031
9	Land holding (total)	0.069
10	Income from AH	0.096
11	Income from Agri	0.172*
12	Total family income	0.146*
13	Social participation	0.443**
14	Extension participation	0.341**
15	Extension contacts	0.438**
16	Primary awareness on LI	0.843**
17	Awareness on insurance purchase	0.819**
18	Awareness on claim settlement	0.796**
*** Correlation is significant at the 0.01 level (2-tailed).*		
*** Correlation is significant at the 0.05 level (2-tailed).*		

Table 29: Relationship between type of dairy animal possession adoption of insurance

Sl. No	Dairy animal type	Adoption of insurance	Correlation
1	Native cattle possession	Native cattle insurance	-0.25
2	CB cattle possession	CB cattle insurance	0.993**
3	Native buffalo possession	Native buffalo insurance	-0.106
4	Graded buffalo possession	Graded buffalo insurance	0.674
*** Correlation is significant at the 0.01 level (2-tailed).*			

4..4.1.1 Constraints of livestock farmers: Constraints as perceived by both LI adopters and non-adopters were analysed under three categories namely., general constraints, constraints in availing livestock insurance and constraints in claim settlement and these constraints ranked by using Henry Garrett technique.

4..4.1.1.1 General constraints of farmers in livestock insurance: A perusal of Table 30 revealed that the most important constraints as perceived by the LI adopters were "schemes are not available round the year and for everyone in the society" (Avg. score 80.43, Rank I) followed by "livestock insurance is not compulsory" (59.01, II), "only a limited number of animals per family can be insured under schemes" (54.28, III), "only scheme beneficiaries or loanee farmers are provided with LI for the animals purchased under loan or scheme and general farmers cannot purchase LI" (49.09, IV). Less important constraints were "We (meat animal rearers) rear livestock for a short duration (<1 year) – no short-duration insurance policies" (1.41, X), "extra fee demand by veterinarians/ bankers/ insurance agents at different stages of insurance purchase and claim settlement - they harass and delay the procedures" (1.1, XI), and "no faith in the Livestock insurance" (0,).

Major constraints for non-adopters were "livestock insurance is not compulsory (64.32, I), "native breeds don't need insurance – less productive, low risk in rearing, sturdy breeds" (63.61, II), "only scheme beneficiaries or loanee farmers are provided with LI for the animals purchased under loan or scheme – general farmers cannot purchase LI" (60.78, III). The less important constraints for non-adopters were "insurance is not available for animal health expenses" (0), "insurance company not accepting coverage for PTD" (0) and "difficulty in the transfer of policy on sale of animals" (0).

Table 30: General constraints of farmers in livestock insurance

Sl. No	Constraints	Adopters		Non-adopters	
		Avg. scores	Rank	Avg. scores	Rank
1	Livestock insurance is not compulsory	59.01	II	64.32	I
2	No faith in the Livestock insurance	0.00	XII	59.47	IV
3	Native breeds don't need insurance – less productive, low risk in rearing, sturdy breeds	11.15	VIII	63.61	II
4	Only scheme beneficiaries/ loanee farmers are provided with LI for the animals purchased under loan/ scheme – General farmers cannot purchase LI	49.09	IV	60.78	III
5	Only, a limited number of animals per family can be insured under schemes	54.28	III	42.38	V
6	Schemes are not available round the year and for everyone in the society	80.43	I	4.95	VI
7	We (meat animal rearers) rear livestock for a short duration (<1 year) – no short-duration insurance policies	1.41	X	1.24	VII
8	The apathy of Veterinarians/ Bankers/ Insurance agents towards livestock insurance	6.46	IX	0.28	VIII
9	Extra fee demand by Veterinarians/ Bankers/ Insurance agents at different stages of insurance purchase and claim settlement - they harass and delay the procedures	1.10	XI	0.00	-
10	Insurance is not available for animal health expenses	26.54	V	0.00	-
11	Insurance company not accepting coverage for PTD	13.99	VII	0.00	-
12	Difficulty in the transfer of policy on sale of animals	14.00	VI	0.00	-
Adopters =100, non-adopters =100					

4..4.1.1.2 Farmers' constraints in availing livestock insurance: Careful observation of Table 31 revealed that the major constraints faced by LI adopters in availing LI were "high premium rates – not affordable (Avg. scores 52.29, I), followed by "lengthy and complex insurance procedures" (47.49, II), "insurance is available for the select type of animals" (45.69, III). The less important constraints for LI adopters were "lack of delivery mechanism at farmer doorsteps" (1.48, XI), "the policy document is not delivered to the farmer – it doesn't reach the party" (1.37, XII) and "animal identification is not fool-proof – can be tampered with or lost" (0,). Further, the most important and less important constraints for LI non-adopters are same as that of LI adopters.

4.4.1.1.3 Farmers' constraints in claim settlement: A perusal of Table 32 revealed that the major constraints faced by LI adopters were "delay in claim settlement" (Avg. score 75.47, I), followed by "high expenses involved in arranging people and vehicles for PM and disposal of the carcass (66.74, II), "lengthy and complex claim procedures" (42.99, III).

Least important constraints were "unsatisfied with the length of the indemnity period – we need ultra-short/ lengthy periods" (2.44, XII), "changes in skin colour, horn length of the animal (long-duration insurance) – identification marks" (0) and lastly, "not satisfied with the service" (0).

Table 31: Farmers' constraints in availing livestock insurance

Sl. No	Constraints	Adopters		Non-adopters	
		Avg. scores	Rank	Avg. scores	Rank
1	High premium rates – not affordable	52.29	I	67.95	I
2	Inadequate publicity of scheme mechanism - Lack of awareness about livestock insurance procedures and schemes among the farmers	7.98	VIII	65.67	III
3	Lengthy and complex insurance procedure	47.49	II	67.39	II
4	Large herd size, difficult to pay the premium and maintain documents	5.52	IX	57.83	IV
5	Insurance is available for the select type of animals (Cow/ buffalo etc… not bullocks)	45.69	III	28.83	V
6	Distant location of Bank/veterinary hospital/insurance company – difficult in accessing the insurance services	9.85	VII	6.87	VI
7	Lack of delivery mechanism at farmer doorsteps	1.48	XI	0	-
8	Animal identification is not fool-proof – can be tampered with or lost	0	-	0	-
9	Ear tagging complications: wound/ loss of ear tags/ loss of numbers	23.97	V	0	-
10	Insured animals will be tagged – I don't prefer my animals to be tagged/ injured/ Religious beliefs	2.33	X	0	-
11	Death of animal before retagging	14.14	VI	0	-
12	The policy document is not delivered to the farmer – it doesn't reach the party	1.37	XII	0	-
13	Not easy to buy PTD and an extra premium must be paid for PTD	41.31	IV	0	-
adopters=100, non-adopters=100					

Table 32: Farmers' constraints in claim settlement

Sl. No	Constraints	Adopters		Non-adopters	
		Avg. scores	Rank	Avg. scores	Rank
1	Lengthy and complex claim procedure	42.99	III	33.63	IV
2	Delay in the visit of insurance agent/ Vet/ Banker – difficult to keep the carcass for a long duration	11.54	IX	3.26	VI
3	Lack of awareness about the claim procedure	26.25	V	43.31	III
4	Claim amount of the livestock is not based on present market value/ production performance – it is based on the insured amount only	15.21	VIII	47.33	II
5	Death of animal within 15 days of insurance	2.96	XI	22.36	V
6	Unsatisfied with the length of the indemnity period – we need ultra-short/ lengthy periods	2.44	XII	58.16	I
7	Difficulty in contacting and intimating the Bankers, Veterinary doctors, and insurance agents on holidays/ busy days/ due to remote location	38.64	IV	0.26	VII
8	Loss of tags	18.02	VII	0	-
9	Changes in skin colour, horn length of the animal (long-duration insurance)– identification marks	0	-	0	-
10	Delay in claim settlement	75.47	I	0	-
11	Claim payment less than insured amount – without any reasons	18.7	VI	0	-
12	Difficulty to settle a claim under PTD	3.55	X	0	-
13	High expenses involved in arranging people/ vehicles for PM and disposal of the carcass	66.74	II	0	-
14	Not satisfied with the service	0	XIII	0	-
adopters=100, non-adopters=100					

Major constraints for non-adopters are, “unsatisfied with the length of the indemnity period – we need ultra-short or lengthy periods” (58.16, I), “claim amount of the livestock is not based on present market value/ production performance – it is based on the insured amount only” (47.33, II) and “lack of awareness about the claim procedure” (43.31, III). While the least important constraints for the non-adopters are “difficulty to settle a claim under PTD” (0), “high expenses involved in arranging people/ vehicles for PM and disposal of the carcass” (0) and “not satisfied with the service” (0).

4.4.1.2 Constraints faced by Veterinarians: Statements on the perceived constraints faced by the veterinarians were categorised as “in implementation of LI” and “in claim settlement” and responses in three-point continuum were recorded from the respondent veterinarians. The data was analysed using weighted mean scores and the results on ranking of constraints are presented in the Table 33 and 34.

4..4.1.2.1 Constraints faced by Veterinarians in implementing livestock insurance: Perceived constraints of the veterinarians in implementing livestock insurance were ranked by using weighted mean score technique and presented in Table 33. A perusal of Table 33 revealed that the major constraints faced by the Veterinarians were “Farmers ask for insurance when his animal falls sick” (weighted mean score 88.25, Rank I), followed by “insurance subsidy amount not available round the year” (86.75, II), “farmers are not interested to insure their livestock without subsidy in the premium” (86.00, III).

Less important constraints were, “farmer’s lack of awareness about livestock insurance procedures and schemes” (63.25, XI), “farmers refuse to tag their animal - religious beliefs– no wound should be incited, even the tag wound” (54.00, XII) and “farmers not interested in livestock insurance” (48.25, XIII).

Table 33: Constraints faced by veterinarians in implementing livestock insurance

Sl. No	Constraints	VI	LI	NC	Weighted mean score	Rank
		f	f	f		
1	High premium rates	120	60	20	75.00	VII
2	Farmers not interested to insure their livestock without subsidy in the premium	156	32	12	86.00	III
3	Farmers not interested in Livestock Insurance	50	93	57	48.25	XIII
4	Farmer's lack of awareness about livestock insurance procedures and schemes	88	77	35	63.25	XI
5	Farmer ask for insurance when his animal falls sick	164	25	11	88.25	I
6	Farmers refuse to tag their animal - Religious beliefs – no wound should be incited, even the tag wound	80	56	64	54.00	XII
7	Ear tagging complications: wound/ loss of ear tags/ loss of numbers/ injury to the personnel	98	61	41	64.25	X
8	Delay in reporting the loss of tag in animals by the Farmers – Retagging is a menace	136	43	21	78.75	VI
9	Difficult to identify the interested farmer with listed criteria in guidelines and ready to pay premium	99	72	29	67.50	VIII
10	Minimum targets for Livestock Insurance under subsidy schemes	143	40	17	81.50	V
11	Insurance subsidy amount not available round the year	158	31	11	86.75	II
12	Non-availability of insurance agents at taluka level	102	57	41	65.25	IX
13	Insurance company not ready to take insurance proposals other than scheme beneficiaries and loanee farmers	156	30	14	85.50	IV
n=200, f-frequency, VI-very important, LI-Less important, NC-not a constraint						

4.4.1.2.2 Constraints faced by Veterinarians in settlement of livestock insurance: Detailed observation of Table 34 revealed that the major constraints faced by the veterinarians in settlement of livestock insurance were “death of animal before retagging – delayed reporting of loss of tag by the farmer” (weighted mean score 78.75, Rank I), followed by “repeated enquiry by the farmers until claim settlement” (78.50, II), “on rejection of the claim the veterinarian is projected as the culprit by all” (76.75, III).

Less important constraints are “delayed intimation of the animal death – PM findings will not be correct” (51.75, XI), “delay in receiving of tag, post-mortem photos, policy documents from farmer (49.50, XII), “political pressures on the observations in PM reports” (34.25, XIII).

4.4.1.3 Constraints faced by Bankers: Bankers opinion on constraints in livestock insurance were ranked by using weighted mean scores. A perusal of Table 35 revealed that the most important constraint faced by the bankers is “lack of awareness in farmers about the importance of livestock insurance (weighted mean score 91.5), followed by “delayed intimation of death of the animal (86), “lack of fool proof animal identification system” (83), “delayed submission of filled claim form, tag, post-mortem photos, veterinary post-mortem certificate and documents by farmer/veterinarian to bank” (82.5), “delay in claim settlement by insurance company” (75), “carelessness and poor management of the insured livestock by the farmers” (74.5), “claim payment less than insured amount (71), “delayed dispatch of documents (received from vet/ farmer) to the insurance company from bank” (66.5) and “difficulty to maintain insurance records of each animal at bank (61).

Table 34: Constraints faced by veterinarians in settlement of livestock insurance

Sl. No	Constraints	VI	LI	NC	Weighted mean score	Rank
		f	f	f		
1	Farmers generally ignore the health and treatment of the insured livestock – especially the meat animals	82	78	40	60.50	IX
2	Death of animal before retagging – delayed reporting of loss of tag by the farmer	130	55	15	78.75	I
3	Delayed intimation of the animal death – PM findings will not be correct	63	81	56	51.75	XI
4	Difficult to attend PM in time due to other official engagements and large area of coverage.	100	51	49	62.75	VIII
5	No proper lab support to access the cause of death – insurance company does not share the responsibility	119	55	26	73.25	V
6	Difficult to judge the production performance of animal before falling ill and death by seeing carcass	80	79	41	59.75	X
7	Political pressures on the observations in PM reports	36	65	99	34.25	XIII
8	Delay in receiving of tag, post-mortem photos, policy documents from farmer	64	70	66	49.50	XII
9	Delay in claim settlement from insurance office	118	60	22	74.00	IV
10	Repeated enquiry by the farmers until claim settlement	134	46	20	78.50	II
11	Not easy to settle a claim under PTD	87	80	33	63.50	VII
12	Claim payment less than insured amount – without any reasons	110	53	37	68.25	VI
13	On rejection of the claim the Veterinarian is projected as the culprit by all	135	37	28	76.75	III
n=200, f-frequency, VI-very important, LI-Less important, NC-not a constraint						

Table 35: Bankers' opinion on constraints in livestock insurance

Sl. No	Constraints	VI	LI	NC	Weighted mean score	Rank
		f	f	f		
1	Lack of awareness in farmers about the importance of livestock insurance	85	13	2	91.50	I
2	Lack of fool proof animal identification system	67	32	1	83.00	III
3	Difficulty to maintain insurance records of each animal at Bank	41	40	19	61.00	IX
4	Carelessness and poor management of the insured livestock by the farmers	60	29	11	74.50	VI
5	Constraints with respect to livestock insurance - delayed intimation of death of the animal	75	22	3	86.00	II
6	Delayed submission of filled claim form, tag, post-mortem photos, veterinary post-mortem certificate and documents by farmer/ veterinarian to bank	68	29	3	82.50	IV
7	Delayed dispatch of documents (received from Vet/ farmer) to the insurance company from bank	44	45	11	66.50	VIII
8	Delay in claim settlement by insurance company	54	42	4	75.00	V
9	Claim payment less than insured amount	50	42	8	71.00	VII
n=100, f-frequency, VI-very important, LI-Less important, NC-not a constraint						

4..4.1.4 Constraints faced by staff of Insurance agency: Opinion of the insurance agency staff on constraints in implementation of livestock insurance were ranked by using weighted mean scores and are presented in Table 36. A perusal of Table 36 revealed that the most important constraint faced by the insurance agency staff in implementation of LI are "lack of awareness in the farmers about the livestock insurance procedures" (weighted mean score 43) followed by remoteness of the area to be served" (42), "carelessness and poor management of the insured livestock" (38.5), "only animals under scheme or loan purchases are covered under insurance" (37.5), "difficulties in animal identification (tagging)" (35.5), "premium subsidization has adverse effect on general insurance" (34), "high operating cost" (30), "laborious" (29), "shortage of insurance agency staff to attend the cases of livestock insurance" (26).

Further, it can be noted from Table 36 that the most important constraint faced by the insurance agency staff in claim settlement is "delay in the intimation of the animal death (46), followed by "untimely submission of documents" (44), "high claim ratio (43.5), "fraud claims (40), "difficult to visit deceased animal on time due to other official engagements, remote location, and large area of coverage" (39), "shortage of insurance agents to attend the cases of insurance" (32) and "laborious claim settlement procedures" (31).

4.5 Suggestions for improvement in services and coverage of LI: Suggestions for improvement in services and coverage of LI were collected from the veterinarians, bankers and insurance agency staff. The data was analysed and the suggestions were ranked using weighted mean scores and presented in Table 38, 39 and 40. Also, wants of the livestock farmers were collected and presented in percentages in Table 37.

Table 36: Constraints in livestock insurance - opinion of insurance agency

Sl. No	Constraints	VI	LI	NC	Weighted mean score	Rank
		f	f	f		
A	**Constraints in implementation**					
1	Lack of awareness in farmers about the livestock insurance procedures	41	4	5	43.00	I
2	High operating cost	22	16	12	30.00	VII
3	Remoteness of area to be served	39	6	5	42.00	II
4	Difficulties in animal identification (tagging)	32	7	11	35.50	V
5	Shortage of insurance agents to attend the cases of livestock insurance	21	10	19	26.00	IX
6	Only animals under scheme or loan purchases are covered under insurance	32	11	7	37.50	IV
7	Carelessness and poor management of the insured livestock	33	11	6	38.50	III
8	Premium subsidization has adverse effect on general insurance	26	16	8	34.00	VI
9	Laborious	21	16	13	29.00	VIII
B	**Constraints in claim settlement**					
1	Delay in intimation of the animal death	44	4	2	46.00	I
2	Difficult to visit deceased animal on time due to other official engagements, remote location, and large area of coverage	36	6	8	39.00	V
3	Shortage of insurance agents to attend the cases of insurance	23	18	9	32.00	VI
4	Untimely submission of documents	41	6	3	44.00	II
5	Fraud claims	36	8	6	40.00	IV
6	High claim ratio	40	7	3	43.50	III
7	Laborious claim settlement procedures	23	16	11	31.00	VII
n=50, f-frequency, VI-very important, LI-Less important, NC-not a constraint						

4.5.1 Livestock farmers' wants: Perusal of Table 37 revealed that the major wants of the LI adopters were "cover all animals in the herd/ owned by the farmers" (98%), followed by "avoid PM for all natural deaths and death due to diseases" (94%), "replace PM report with death certificates" (88%), "reduce the time involved in purchase of policy and claim settlement" (84%), "ease the process of insurance and claim – mobile based methods" (77%) and "decrease the premium rates/ free insurance" (65%).

Further it can be noted from the Table 37 that the most important wants of the LI non-adopters were "decrease the premium rates/ free insurance" (100%) followed by "cover all animals in the herd/ owned by the farmers" (97%), "avoid PM for all natural deaths and death due to diseases" (76%), "reduce the time involved in purchase of policy and claim settlement "(72%) and "replace PM report with death certificates" (62%).

4.5.2 Suggestions of Veterinarians: Detailed study of Table 38 revealed the most important suggestion from the veterinarians was "LI should be open to all farmers (not just scheme beneficiaries/ loanee farmers) – and should be made compulsory for all animals held (weighted mean score 90.25), followed by "instead of compensation schemes government should fund insurance scheme to cover all the sections of the society and for all the domestic species" (89.75), "strict penalties should be imposed for those involved in malpractices related to LI" (89.00), "regular payment of health and PM certificate fees to the Veterinarian by the concerned" (87.50), "improvement in animal healthcare and diagnostic infrastructure and services by DAHVS, Milk unions and Veterinary Universities" (86.75), "insurance premium should be reduced to cover a larger mass" (85.50), "the time frame for settling the claim by company should be reduced" (85.25), "android app-based procedures for insuring livestock" (83.75),

Table 37: Wants of farmers in livestock insurance

Sl. No	Wants	Adopters	Non-adopters	Total
		%	%	%
1	Decrease the premium rates/ free insurance	65	100	82.5
2	Cover all animals in the herd/ owned by the farmers	98	97	97.5
3	Insurance should be available for all categories of livestock farmers	50	35	42.5
4	Alternate identification methods other than tagging	20	35	27.5
5	Provide health insurance	18	8	13.0
6	Avoid PM for all natural deaths and death due to diseases	94	76	85.0
7	Replace PM report with death certificates	88	62	75.0
8	Ease the process of insurance and claim – mobile based methods	77	43	60.0
9	Reduce the time involved in purchase of policy and claim settlement	84	72	78.0
10	Prompt cover for PTD	28	0	14.0
11	Offer customized indemnity to interested farmers	2	0	1.0
12	Policy transfer (on sale of animal) should be made easy	8	0	4.0
adopters=100, non-adopters=100				

Table 38: Veterinarians' suggestions to improve service and coverage of livestock insurance

Sl. No	Suggestions	SA	A	DA	Weighted mean score	Rank
		f	f	f		
1	LI should be open to all farmers and should be made compulsory for all animals held	166	29	5	90.25	I
2	Insurance premium should be reduced to cover a larger mass	149	44	7	85.50	VI
3	Instead of compensation schemes government should fund insurance scheme to cover all the sections of the society and for all the domestic species	164	31	5	89.75	II
4	Advanced and fool proof identification methods should be adopted	125	59	16	77.25	XI
5	Android app-based procedures for insuring livestock:	146	43	11	83.75	VIII
6	Using ICT for Claim settlement: a. Video calling at the time of animal's death confirming animal, ear tag number and the owner b. RTGS of indemnity amount to the farmer's account.	122	64	14	77.00	XII
7	Insurance provision for animal health expenses (surgery and costly treatment) should be started	120	65	15	76.25	XIII
8	Strict penalties should be imposed for those involved in malpractices related to LI	158	40	2	89.00	III
9	Insurance agency, Bank and Veterinary Institutions should be made responsible not only for the issuance but also for the documentation	101	72	27	68.50	XIV
10	All the information of the LI should be made available to the farmer through Android app	135	53	12	80.75	X
11	The time frame for settling the claim by company should be reduced	143	55	2	85.25	VII
12	Education and awareness programs on livestock insurance should be undertaken on large scale	136	60	4	83.00	IX
13	Regular payment of health and PM certificate fees to the Veterinarian by the concerned	154	42	4	87.50	IV
14	Improvement in animal healthcare and diagnostic infrastructure and services by AH&VS, Milk unions and Veterinary Universities	150	47	3	86.75	V
n=200, f=frequency, SA-strongly agree, A-agree, DA-disagree.						

"education and awareness programs on livestock insurance should be undertaken on large scale" (83.00), "all the information of the LI should be made available to the farmer through Android app" (80.75), "advanced and fool proof identification methods should be adopted" (77.25), "using ICT for claim settlement" (77.00), "insurance provision for animal health expenses (surgery and costly treatment) should be started – as in humans" (76.25) and lastly "insurance agency, bank and veterinary institutions should be made responsible not only for the issuance but also for the documentation" (68.50).

4.5.3 Suggestions of Bankers: A perusal of Table 39 revealed that the most important suggestion from the bankers to improve service and coverage of livestock insurance was "to improve animal healthcare and diagnostic infrastructure and services" (weighted mean score 88.5) followed by, "education and awareness programs on livestock insurance should be undertaken on large scale" (88), "LI should be open to all farmers (not just scheme beneficiaries/ loanee farmers) - and should be made compulsory for all animals held" (87.5), "strict penalties should be imposed for those involved in malpractices related to LI" (87.5), "android app-based procedures for insuring livestock" (85.5), "faster settling of the claim by insurance company" (85.5), "instead of compensation schemes government should fund insurance scheme to cover all the sections of the society and for all the domestic species" (84.5), "insurance premium should be reduced to cover a larger mass" (82.5), "using ICT in claim settlement" (82.5), "advanced and fool proof identification methods should be adopted" (78.5), "all the information of the LI should be made available to the farmer through Android app" (81.5) and lastly "insurance agency, bank and veterinary institutions should be made responsible not only for the issuance but also for the documentation" (66.5).

Table 39: Bankers' suggestions to improve service and coverage of livestock insurance

Sl. No	Suggestions	SA	A	DA	Weighted mean score	Rank
		f	f	f		
1	LI should be open to all farmers and should be made compulsory for all animals held	80	15	5	87.50	III
2	Insurance premium should be reduced to cover a larger mass	67	31	2	82.50	VIII
3	Instead of compensation schemes government should fund insurance scheme to cover all the sections of the society and for all the domestic species	73	23	4	84.50	VII
4	Advanced and fool proof identification methods should be adopted	61	35	4	78.50	XI
5	Android app-based procedures for insuring livestock	73	25	2	85.50	V
6	Using ICT tools for claim settlement	70	25	5	82.50	VIII
7	Strict penalties should be imposed for those involved in malpractices related to LI	76	23	1	87.50	III
8	Insurance agency, Bank and Veterinary Institutions should be made responsible not only for the issuance but also for the	50	33	17	66.50	XII
9	All the information of the LI should be made available to the farmer through Android app	66	31	3	81.50	X
10	Faster settling of the claim by insurance company	71	29	0	85.50	V
11	Education and awareness programs on livestock insurance should be undertaken on large scale	76	24	0	88.00	II
12	Improve animal healthcare and diagnostic infrastructure and services	77	23	0	88.50	I
n=100, f=frequency, SA-strongly agree, A-agree, DA-disagree.						

4.5.4 Suggestions of insurance agency staff: A perusal of Table 40 revealed that the most important suggestion from the insurance agency staff to improve service and coverage of livestock insurance was “insurance premium should be reduced to cover a larger mass (25) followed by, “try to reduce the time frame for settling the claim” (12.5), “android app-based procedures for livestock insurance” (12), “instead of compensation schemes government should fund insurance scheme to cover all the sections of the society and for all the domestic species” (11), “all the information of the LI should be made available to the farmer through android app” (10), “LI should be open to all farmers and should be made compulsory for all animals held” (9), “advanced and fool proof identification methods should be adopted” (8.5), “using ICT tools for claim settlement (7.5), “strict penalties should be imposed for those involved in malpractices related to LI” (5.5), “education and awareness programmes on livestock insurance should be undertaken on large scale” (5) and lastly “improvement in animal healthcare and diagnostic infrastructure and services by DAHVS, Milk unions and Veterinary Universities (4.5).

4.6 Duration of claim settlement: Detailed study of the Table 41 revealed that in general there were 12 steps in claim settlement wherein the death of the animal is considered as first step. DAHVS facilitated claim settlements had 09 steps wherein intimation to bank, submission of documents to bank and claim amount deposition to milk unions were omitted. Bank facilitated claim settlements had 11 steps wherein claim amount deposition to milk unions were omitted. Milk union facilitated claim settlements had 08 steps wherein intimation to bank, visit by insurance agent, request and receipt of claim form are not followed.

Table 40: Suggestions to improve service and coverage of livestock insurance - insurance agency staff

Sl. No	Suggestions	SA	A	DA	Weighted mean score	Rank
		f	f	f		
1	LI should be open to all farmers and should be made compulsory for all animals held	2	14	34	9.00	VI
2	Insurance premium should be reduced to cover a larger mass	18	14	18	25.00	I
3	Instead of compensation schemes Government should fund insurance scheme to cover all the sections of the society and for all the domestic species	5	12	33	11.00	IV
4	Advanced and fool proof identification methods should be adopted	3	11	36	8.50	VII
5	Android app-based procedures for Livestock insurance	7	10	33	12.00	III
6	Using ICT tools for claim settlement	3	9	38	7.50	VIII
7	Strict penalties should be imposed for those involved in malpractices related to LI	1	9	40	5.50	IX
8	All the information of the LI should be made available to the farmer through Android app	5	10	35	10.00	V
9	Try to reduce the time frame for settling the claim	3	19	28	12.50	II
10	Education and awareness programmes on livestock insurance should be undertaken on large scale	1	8	41	5.00	X
11	Improvement in animal healthcare and diagnostic infrastructure and services by AH & VS, Milk unions and Veterinary Universities	1	7	42	4.50	XI
n=50, f-frequency, SA-strongly agree, A-agree, DA-disagree.						

Table 41: Steps in claim settlement and their duration (facilitator-wise)

Sl. No	Steps		DAHVS n=40	Bank n=20	Tumakuru Milk Union n=20	Mandya Milk Union n=20	Belagavi Milk Union n=20	Ballari Milk Union n=20
1	Death of the insured livestock	Min	0.00	0.00	0.00	0.00	0.00	0.00
2	Intimation to the Bank	Min	-	0.00	-	-	-	-
		Max	-	0.60	-	-	-	-
		Avg	-	0.10	-	-	-	-
3	Intimation to Veterinarian	Min	0.00	0.00	*	*	*	*
		Max	0.50	0.58	*	*	*	*
		Avg	0.07	0.09	*	*	*	*
4	Intimation to Insurance agency	Min	0.01	0.00	*	*	*	*
		Max	0.54	0.63	*	*	*	*
		Avg	0.12	0.12	*	*	*	*
5	Visit by Insurance agent	Min	0.02	0.06	-	-	-	-
		Max	0.71	0.06	-	-	-	-
		Avg	0.26	0.06	-	-	-	-
6	PM conducted by the Veterinarian	Min	0.02	0.03	*	*	*	*
		Max	0.77	0.65	*	*	*	*
		Avg	0.20	0.15	*	*	*	*
7	Request for claim form	Min	0.00	0.00	-	-	-	-
		Max	4.00	2.00	-	-	-	-
		Avg	0.31	0.55	-	-	-	-
8	Receipt of claim form	Min	0.00	1.00	-	-	-	-
		Max	29.00	38.00	-	-	-	-
		Avg	8.14	7.50	-	-	-	-
9	Submission of claim documents to the Bank/ Milk Union	Min	-	0.00	16.00	35.00	6.00	4.00
		Max	-	14.00	64.00	84.00	28.00	25.00
		Avg	-	3.11	25.90	54.75	15.80	12.00
10	Submission of claim documents to the Insurance company	Min	0.00	0.00	1.00	1.00	1.00	12.00
		Max	16.00	2.00	14.00	18.00	107.00	22.00
		Avg	3.42	0.37	5.70	3.55	40.65	14.00
12	Claim amount deposited to the Milk union	Min	-	-	22.00	36.00	14.00	55.00
		Max	-	-	51.00	72.00	60.00	114.00
		Avg	-	-	34.55	46.70	36.40	96.19
13	Claim amount deposited to the livestock owners' account	Min	3.00	10.00	4.00	17.00	25.00	14.00
		Max	87.00	176.00	8.00	44.00	91.00	14.00
		Avg	37.68	58.84	7.05	34.05	56.75	14.00
	Total	**Avg**	**50.21**	**70.88**	**73.20**	**139.05**	**149.60**	**136.19**

- = not followed/not applicable, * = data not obtained,

Forty claim settlement details of dairy animals facilitated through DAHVS were analysed and it can be noted from Table 41 that first five steps were completed within one day. After the death of the dairy animal the average time duration taken to intimate the veterinarian was 0.07 days, intimation to insurance agency (0.12 days), visit by insurance agent after intimation (0.26 days), PM conducted by the Veterinarian after intimation (0.20 days), request for claim form after PM (0.31 days), receipt of claim form after request (8.14 days), submission of claim documents to the insurance company after receipt of claim form (3.42 days), claim amount deposited to the livestock owners' account after submission of documents was average 37.68 days. Average duration taken for claim settlement facilitated through DAHVS was 50.21 days.

Twenty claim settlement details of dairy animals facilitated through Bank were analysed and it can be noted from Table 41 that first seven steps were completed within one day. After the death of the dairy animal the average time duration taken to intimate the bank was 0.10 days, intimation to veterinarian was 0.09 days, intimation to insurance agency (0.12 days), visit by insurance agent after intimation (0.06 days), PM conducted by the Veterinarian after intimation (0.15 days), request for claim form after PM (0.55 days), receipt of claim form after request (7.50 days), submission of claim documents to the bank (3.11 days), submission of claim documents to the insurance company after receipt of claim form (0.37 days), claim amount deposited to the livestock owners' account after submission of documents was average 58.84 days. Average duration taken for claim settlement facilitated through bank was 70.88 days. Twenty claim settlement details of dairy animals facilitated through Tumakuru milk union were analysed and it can be noted from Table 41 that first four steps were completed

Fig 9: GANTT chart for claim settlement (insurance facilitated by DAHVS)

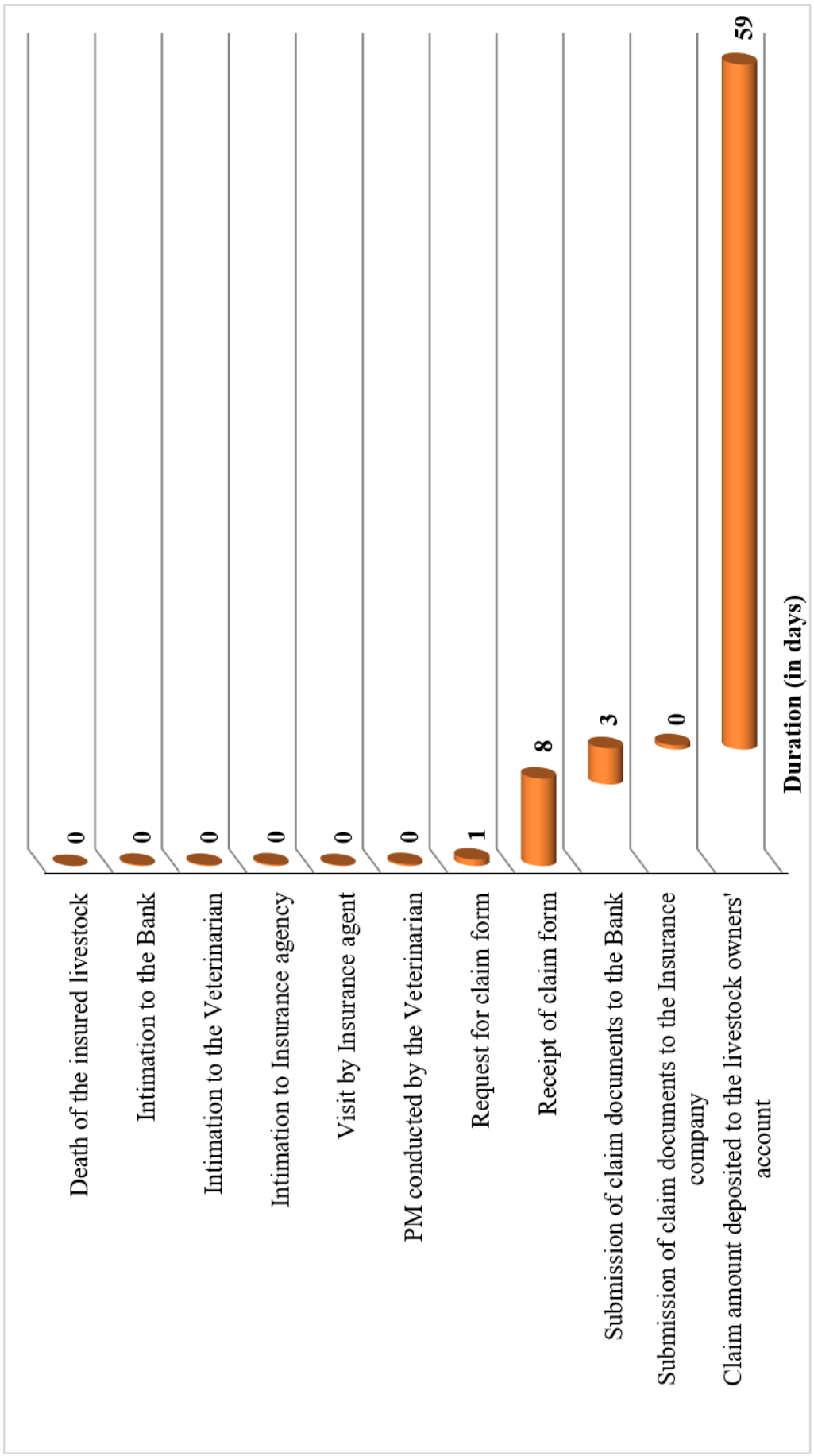

Fig 10: GANTT chart for claim settlement (insurance facilitated by Banks)

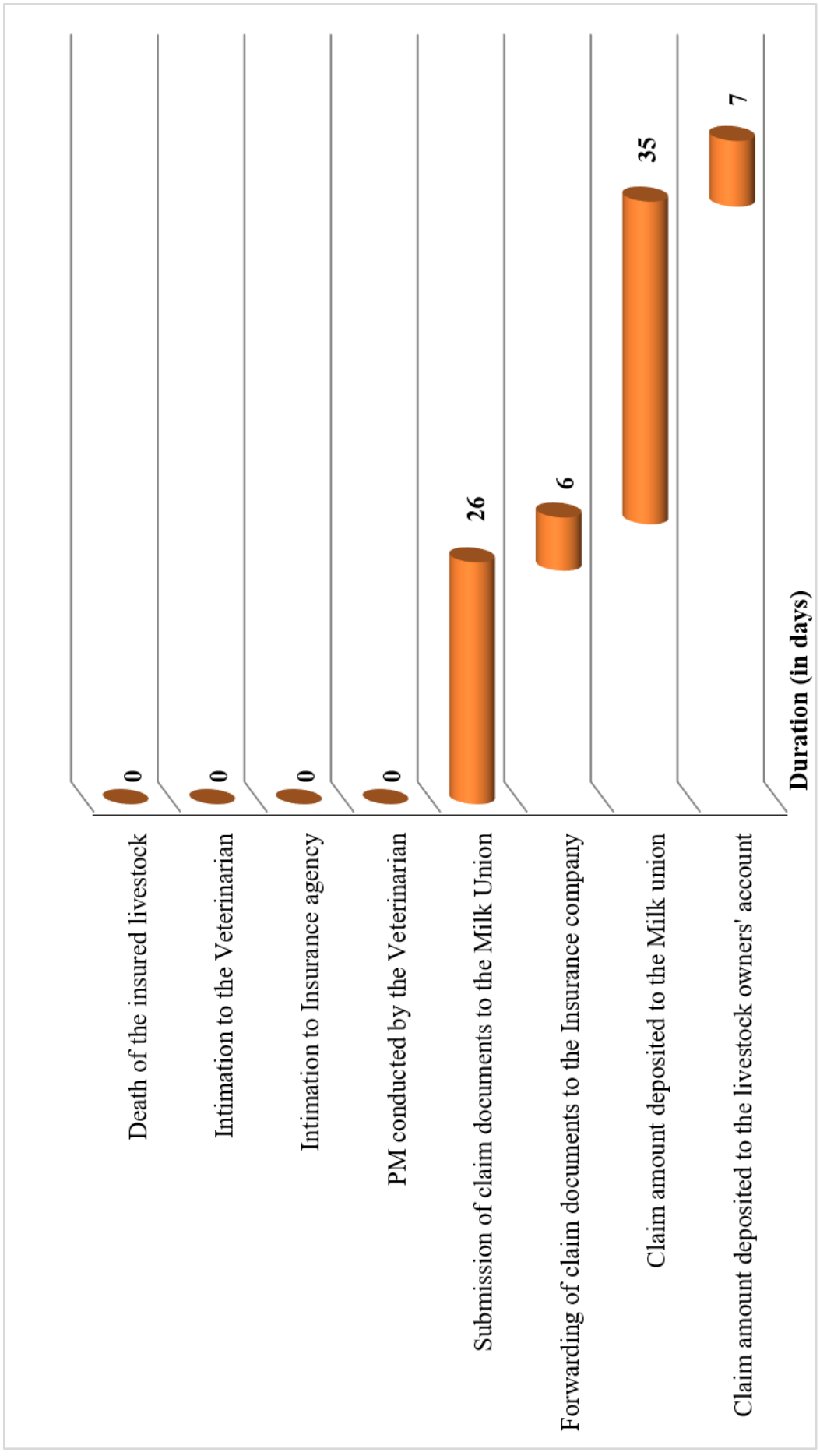

Fig 11: GANTT chart for claim settlement (insurance facilitated by Milk Union)

within a day. After the death of the dairy animal, intimation to the veterinarian (done through the concerned MPCS secretary), intimation to insurance agency (through email by the veterinarian), PM by the veterinarian were performed within a day (data not obtained). The average time duration taken after PM for submitting the claim documents to the milk union was 25.90 days, submission of claim documents to the insurance company after receipt at the milk union (5.70 days), claim amount deposited to the milk union after submission of the documents to the insurance company (34.55 days), average duration for depositing claim amount to the livestock owners' account was 7.05 days. Average duration taken for claim settlement from date of death of animal facilitated through Tumakuru milk union was 73.20 days.

Further the claim settlement process in Mandya, Belagavi and Ballari milk unions are delayed compared to Tumakuru milk union. Average duration taken for claim settlement facilitated through Mandya, Belagavi and Ballari milk unions were 139.05, 149.60 and 136.19 days respectively.

Discussion

V. DISCUSSION

The results of the present study on livestock insurance were discussed in this chapter with appropriate reasons and explanations. The results were compared for similarity/inline or dissimilarity/contrast with reported findings of other research investigations. The discussions on the results of the study were made under the following headings:

5.1 Status of livestock insurance in Karnataka,

5.2 Socio-economic profile of livestock farmers,

5.3 Awareness level and adoption of livestock insurance,

5.4 Constraint analysis of livestock insurance,

5.1 STATUS OF LIVESTOCK INSURANCE IN KARNATAKA

Information regarding the status of livestock insurance in Karnataka is presented and discussed under the following headings.

5.1.1 Sources of livestock insurance

The presence and involvement of the four facilitators of LI in Karnataka namely, Department of Animal Husbandry and Veterinary Services (DAHVS), 14 District Cooperative Milk Producers' Unions, Karnataka Sheep and Wool Development Corporation (KSWDC) and Public and Private Banks funding livestock purchases was noted by the study (Table 1). It was also noted that none of the insurance companies provided livestock insurance when approached directly by the livestock farmer. Livestock insurance was provided only if facilitated through the

above-mentioned facilitators. Reasons for not encouraging private LI are explained further in the subheading on sources of livestock insurance under the section "Adoption of livestock insurance".

It was recorded that there are two types of insurance providers, firstly four public sector companies, and secondly, more than ten private sector insurance companies. Though there were several players in the LI market, more than 80 per cent of the LI in India were done by the public sector insurance companies (Subhash *et al.,* 2016)

Participation of private sector insurance players was very minimum compared to the public sector, but the researcher found that the trend is reversing, private insurance agencies are taking over the public sector insurance agencies tie ups in public and private banks in rural areas.

5.1.2 Types of livestock insurance provided

Perusal of Table 6 revealed that three types of risks in livestock rearing were covered under livestock insurance policies in Karnataka namely, death of livestock, Permanent Total Disability (PTD) and Transit insurance. But, majority of the insurance companies both public and private were primarily covering the death of livestock, followed by transit insurance and rarely PTD is covered as it involves a complex procedure while settlement. Poor demand for PTD and transit insurance from the livestock owners is also a major factor.

Livestock insurance in Karnataka is primarily covered through the government schemes, milk union schemes and bank funded livestock projects. Schemes implemented during 2019-20 and 2020-21 were National Livestock Mission (NLM) –

sub-mission on extension and innovation, National Livestock Mission (NLM) – sub-mission on breed development, beneficiary-oriented schemes, free livestock insurance for SC/ST livestock owners, group cattle insurance scheme, beneficiary-oriented schemes and bank facilitated livestock insurance.

The subsidy amount allotted by central, and state governments for the above livestock insurance schemes was very meagre while the number of targets set to be achieved for livestock insurance was very small compared to the animal (cattle and buffalo) population of Karnataka. Indemnity period of one year was also felt to be too short for dairy animals which are generally reared to four to five years. Premium subsidy fund was not available round the year.

Free livestock insurance for SC/ST livestock owners was an excellent scheme funded by Government of Karnataka and implemented during 18-19 and 19-20. This scheme which is discontinued needs to be revived for the coming years so that the milk incentive amount of SC and ST category livestock holders will be benefited directly.

Schemes such as Pashu Bhagya, Amrutha (for women), SCP, TSP and other schemes needs to be continued with increased allotment and targets in the state so that many poorest of the poor will be benefitted by taking stringent measures while purchase of assets and follow ups.

Major drawbacks in these government schemes were, even though the demand for coverage of death of livestock was high, access to livestock insurance through the government schemes was limited to the selected beneficiaries or particular section of society and not open for all. Insurance schemes of milk unions were restricted only for

the members of the MPCS who regularly pour milk to the society. Insurance facility through schemes was not available round the year. The number of animals and type of livestock to be insured was also restricted. Selection of beneficiary is generally influenced. None of the private and public insurance companies provided insurance coverage in any form to the livestock when approached directly by the livestock owners.

Insurance is compulsory for the livestock purchased in the bank funded projects. But access to credit by banks depends on various factors like regular repayment history, feasibility report, guarantor availability, surety for loans. Hence the reach of livestock insurance through banks is very limited.

The findings are in line with Singh *et al.* (2019), who had reported that out of the total 75 sampled households, 65 households insured two animals as benefit of subsidy was provided to maximum of two animals per family.

Singh *et al.* (2020) compiled evidence-based reviews on status of livestock insurance in India and recorded that, in 2016, Karnataka decided to implement the Livestock Insurance Scheme to encourage farmers to insure their milch cattle and buffaloes. Under the scheme, a maximum of five cattle or buffaloes would be covered by a farm family. These reports are in agreement with the findings of the present study.

Mann (2015) from his study on the awareness and perception of dairy farmers towards cattle insurance in Punjab, reported that 54 per cent of the respondent purchased the insurance through government department schemes and 33 per cent by directly contacting insurance agent, 12 per cent through private bank agents and only 1 per cent by other means. These findings are partly in line with the present study.

5.1.3 Livestock insurance premium rates and identification methods

A premium amount is charged by the insurance company for insurance coverage of the animal according to the indemnity period and market value of the animal. Apropos Table 7 unveils that the premium rates of all insurance companies for one year indemnity vary between four and five per cent of the market value of the animal. Premium rates for three- year indemnity vary between 10 to 12 for the majority of the companies. Additional one per cent premium is charged each for PTD and transit insurance.

Premium rates under general livestock insurance are higher compared to premium rates under schemes. The premium rates for livestock insurance are observed to be higher than other insurance products viz., vehicle insurance, property insurance, human life insurance. High claim ratio and poor coverage may be the underlining reason.

Singh *et al.* (2020) in their study on "Status of livestock insurance in India and a complete guide: an evidence-based review" reported that in Centrally Sponsored Scheme (CSS) on livestock insurance the premium of the insurance was subsidized to the tune of 50 percent. The basic premium rate is 4 per cent of the sum insured. The premium rates may vary from company to company and ranged between 2.69 per cent to 4.25 per cent for one year coverage, and ranged between 6.85 to 10.59 per cent for three-year indemnity. These findings were in line with the present study

Most insurance companies and Milk Unions used plastic ear tags for identification of livestock, which replaces older brass ear tags. DAHVS uses 12-digit barcoded Unique Animal Identification (UAID) ear tags, while ICICI Lombard Rural

Insurance is using muzzle print and Radio Frequency Identification Device (RFID) tags for animal identification.

Plastic ear tags used by the milk unions and bar-coded ear tags used by DAHVS have numbers and bar codes printed on them. It was reported that these prints faded in some instances and were unable to identify. Bar code scanners were not supplied which again was a hindrance in fool proof animal identification. It was felt that these plastic tags performed way better than the older brass tags, they lasted long, tag loss was negligible, numbers being worn out was also minimal.

The findings were in consonance with Pallavi *et al.* (2018) who reported that the plastic tag is a very common method of identifying animals, and the bar code system can be incorporated into the tag, which facilitates reading, transmission, and registration of data. Out of the total animals insured 93% of the animals were having only plastic tag while 7% of the animals were having both plastic tag and branding together. Higher proportion of plastic tag was due to its ease of application, comparatively less labour requirement, cost effectiveness and not having adverse effects on animal health.

Advanced fool proof identification methods like Iris scanning, muzzle prints, multiple photographs from different angles are being initiated by some start-ups. To avoid the fraudulences in animal identification, ICICI Lombard has adopted RFID tags and muzzle imprints technology, IFFCO-Tokio General Insurance Company has adopted RFID tags.

Moofarm an agritech company in Punjab, founded by Aashna Singh and Param Singh uses algorithm for identification of cattle and buffalo and claims to have

95% accuracy in distinguishing one from the other. The algorithm only requires pictures of each cow or buffalo from different angles, backgrounds and light. This technology can help solve the fraudulent claim settlement issue in the cattle insurance sector wherein the farmer claims (sends ear/ear tag) of insured cattle, whereas the death has been of uninsured cattle. In addition, through facial recognition technology, their android app also allows farmers to create a digital identity for their animals. Equally, the amount of data MoooFarm allows farmers to have access to means they can reduce their insurance premiums. Farmers can show the milk yield, the type of feed and supplements the animal eats, and any medicines it's been given, as well as it's breeding history.

5.1.4 Livestock population of Karnataka

As per 20th livestock census report (2019), Bengaluru division had the highest (89,82,484) total livestock population, followed by Belagavi, Kalaburagi and Mysuru. Mysuru division had the highest (25,27,166) cattle population, followed by Bengaluru, Belagavi and Kalaburagi. Buffalo population was highest (15,32,127) in Belagavi division, followed by Kalaburagi, Bengaluru and Mysuru. The goat population was highest (20,76,114) in Belagavi division, followed by Kalaburagi, Bengaluru and Mysuru. Bengaluru division had the highest (4349722) sheep population, followed by Kalaburagi, Belagavi and Mysuru. The pig population was recorded highest (125993) in Kalaburagi division, followed by Belagavi, Bengaluru and lastly Mysuru.

Cattle population was high in southern divisions (Bengaluru and Mysuru) of Karnataka, whereas the buffaloes were high in number in northern divisions (Belagavi and Kalaburagi). Prevailing agroclimatic conditions, and preference of the locals for

the produce has a major influence on the distribution of dairy animals. Locals in north Karnataka preferred full fat milk or buffalo milk while in south Karnataka cow milk was preferred. Farmers faced difficulty in rearing cross bred cows in the hot weather of north Karnataka and the productive performance of cross bred cattle was also poor.

Sheep population was high in Chitradurga, Tumakuru, Ballari, Belagavi, Raichur, Koppal and Bagalkot districts. However, goat population was high in Belagavi district followed by Vijayapura, Kalaburagi, Tumakuru, Chitradurga and Bagalkot districts. The variations in the pattern of district-wise distribution of sheep and goat population might be due to the cultural preference of the farmers and consumers. Rainfed agriculture, draught prone areas, hilly regions, ample grazing land are the factors which are responsible for this high population of small ruminants in these districts. Most of these districts are categorized under dry agro-climatic zones indicating the concentration of small ruminant population in dry zone. The results are in line with Birthal and Partasarathy (2004) who also reported that the arid region had the maximum stocking rate of sheep (92/ sq. km) and in contrast to the findings of Kumar and Singh (2008), who reported that the density of sheep is the highest in coastal region followed by arid region.

Pig population is highest in Kalaburagi division followed by, Belagavi, Bengaluru and Mysuru division. Pork consumption is high in Bengaluru and Mysuru divisions. In Malenadu and coastal regions of Karnataka pigs are reared in semi-intensive production system and fed with homemade cooked feed including kitchen wastes. Farmers in Belagavi division which is shares border with Goa state have taken up piggery as a livelihood option, hence the high numbers in the division. In Kalaburagi division most of the pig population is non- descript breed and maintained

on scavenging. These findings are partly in line with Chauhan *et al.* (2016) who reported that farmers in the hilly regions of north eastern states of India reared pigs on homemade food and kitchen wastes.

5.1.5 Livestock insured under schemes

5.1.5.1 Cattle and buffaloes insured under schemes

Careful observation of Table 10 unveiled that in Karnataka state highest number of cattle and buffaloes were insured in 2020-21 (799836) than in 2019-20 (616219). The contribution of milk unions was huge (567176 and 790505) compared to DAHVS (49043 and 9331) in both financial years respectively.

The highest number of cattle and buffaloes were insured by milk unions in Bengaluru division in both 2019-20 (460796) and 2020-21 (541358), followed by Mysuru, Kalaburagi and Belagavi division. DAHVS insured the highest number of cattle and buffaloes in Bengaluru division (14493) during 2019-20, followed by Kalaburagi, Belagavi and Mysuru. During 2020-21 DAHVS insured a smaller number of cattle and buffaloes compared to 2019-20, but Bengaluru division (4081) had the highest number of cattle and buffaloes insured, followed by Mysuru, Belagavi and Kalaburagi. It is also observed that the number of cattle and buffaloes insured across divisions through DAHVS was better during 2019-20 than 2020-21 while the same through Milk Unions was highest during 2020-21 than 2019- 20.

Cross breed cattle population in Bengaluru and Mysuru divisions was high compared to the Belagavi and Kalaburagi divisions, while the buffalo population was high in the divisions of north Karnataka. Cross breed cattle are sensitive to the diseases and disorders and rearing cross breed cows is risk prone whereas, the

buffaloes are sturdy and are well acclimatized to the agro-climatic conditions. Further, south Karnataka had witnessed disease outbreaks in recent years leaving farmers in huge losses due to mortality and decreased production. Farmers rearing cross breed had higher income due to higher productivity resulting in affordability of the insurance premium, whereas farmers showed less interest to insure indigenous cattle and buffaloes. These are the important reasons for the high numbers of livestock insurance in south Karnataka than north Karnataka.

The findings were in line with Rohith *et al.* (2019) who reported that lowest claim to premium percentage was observed in Dharwad because of dominance of buffaloes and indigenous cattle as compared to crossbred cattle. Farmers were not interested to insure indigenous cattle and buffaloes.

The results were also in consonance with Singh and Chandel (2019) who studied the factors influencing adoption of livestock insurance and stated that in case of cross breeds, the odds ratio increased by 2.8 per cent while probability raised by 0.40 per cent with every 1 per cent increase in percentage of crossbreeds.

Mann (2015) from his study on the awareness and perception of dairy farmers towards cattle insurance in Punjab, reported that 85 per cent of the respondents insured cross breed animals, 33 per cent of the respondents' insured buffaloes and only 1 per cent of farmers insured indigenous animal. These findings are partly in line with the present study.

Perusal of Table 11 further reiterated that milk unions had the major share in the total number of cattle and buffalo insured during the year 2019-20 (92.04%) and 2020-21 (98.83%) while the contribution of DAHVS was a meagre during 2019-20

(7.96%) and 2020-21 (1.17%). During 2019-20 milk unions insured 96.95 per cent of cattle and buffaloes in Bengaluru and 91.23 per cent in Mysuru division, but a meagre 3.06 per cent and 0.91 per cent in Belagavi and Kalaburagi divisions respectively. In the same year DAHVS insured 96.94 per cent of cattle and buffaloes in Belagavi and 99.09 per cent in Kalaburagi division, but a meagre 3.05 per cent and 8.77 per cent in Bengaluru and Mysuru divisions respectively.

During 2020-21 milk unions insured 99.95 per cent of cattle and buffaloes in Bengaluru followed by, Mysuru (98.33%), Kalaburagi (98.26%) and Belagavi (94.11%) divisions. However, in the same year DAHVS insured a meagre 5.89 per cent in Belagavi followed by, Kalaburagi (1.74%), Mysuru (1.67%) and Bengaluru (0.75%) divisions respectively.

Group cattle insurance scheme covered more than 90 per cent of the insurance in Karnataka. This scheme was in force only milk unions of Bengaluru and Mysuru divisions in both the study years but, this was implemented in 2020-21 onwards in the milk unions of Belagavi and Kalaburagi divisions. Hence, the contribution of DAHVS seemed to be greater in North Karnataka during 2019-20 while it was too low in 2020-21. All dairy farmers who are the members of MPCS and daily pour milk to the MPCS have access to the Group Cattle Insurance scheme, unlike the state and central government insurance schemes implemented through DAHVS which involves a complex beneficiary selection procedure making them less accessible to all the livestock owners.

The findings were in line with Rohith *et al.* (2019), who had reported that number of animals insured were found to be higher under Group Cattle Insurance scheme than NLM scheme in Kolar district during 2015–18 because this scheme was easily accessible to the farmers.

5.1.5.2 Meat animals (sheep, goats, and pigs) insured under schemes:

Detailed observation of Table 12 revealed that in Karnataka state highest number of meat animals were insured in 2020-21 (799836) than in 2019-20 (616219). DAHVS insured pigs, sheep, and goats during FY 2020-21 only while, KSWDC insured sheep and goats during 2019-20 and 2020-21. The number of meat animals insured through DAHVS was higher compared to KSWDC.

Insurance for meat animals is totally meagre in Karnataka. As the meat animal owners keep the animals for lesser period of time compared to Milch animals, and animals are sent for slaughter in festival season, at economic crunch situation and even when animal fall sick.

District-wise analysis revealed that the highest number of pigs were insured in Kodagu district (800), followed by Kolar, Tumakuru, Hassan, Chikkaballapura, Chikkamagaluru, Mysuru, Belagavi, Bengaluru Urban and Mandya. While no pigs were insured in Davangere, Chitradurga, Dharwad, Gadag, Vijayapura, Bagalkot and Bidar districts.

Intensive and semi-intensive piggery is practiced in Kodagu, Kolar, Hassan, Mandya, Mysuru, Bengaluru Urban and Belagavi districts. Farmers involved in semi-intensive and intensive piggery had invested capital and are risk bearers. Further, the scheme target allotted to the above districts are high compared to other districts of the state. Hence, the number of pigs insured is highest in these districts.

District-wise analysis of the total number of sheep and goat insured in two years of study period revealed that the highest numbers of sheep and goats were insured in Belagavi (1125) followed by, Chitradurga, Tumakuru, Bidar, Ballari,

Raichur, Vijayapura, Bagalkot, Koppal and Yadgir districts. Dakshina Kannada, Udupi, Uttara Kannada and Kodagu districts recorded less than 100 sheep and goat insurances.

Districts with high sheep and goat population have recorded high number of sheep and goat insurance. Insurance scheme targets given to these districts are also higher compared to other districts with low small ruminant population.

The findings are partly in line with Nepali (2021) who studied on farmers perception on status of livestock insurance in Surkhet district, Nepal and reported that 22.28% of goats, 17.48% of buffaloes, 7.89% of cattle, 25% of pigs were insured.

Choudhary and Srinivasan (2011) in their study on insurance schemes of government of India reported that the Government of Rajasthan started three insurance schemes namely Kamdhenu, Bhais Bima and Avika Kavach schemes against death of cows, buffaloes, and sheep respectively. Under sheep insurance, about 4 lakhs of sheep were covered by the end of March 2009, which constituted less than 1 per cent (0.7 %) of the total sheep population of the country. These findings are in line with the present study.

5.1.5.3 Percentage of livestock insured under schemes

The number of livestock insured was compared with the population and analysed species-wise, the percentage of livestock thus covered by insurance under schemes is presented in Table 13 and Table 14. A perusal of Table 14 revealed that 2.14 per cent of the total livestock (cattle, buffaloes, sheep, goats, and pigs) of the state was covered under insurance during 2019-20 while the state coverage was improved to 2.81 per cent during 2020-21. The percentage of livestock covered was

highest in Bengaluru division during 2019-20 (5.31%) and 2020-21 (6.12%), followed by Mysuru, Kalaburagi and Belagavi (0.15% and 0.33% respectively) divisions.

Division-wise analysis of Table 13 unveiled that the percentage of cattle and buffaloes covered by insurance during 2019-20 and 2020-21 was highest in Bengaluru division (15.75% and 18.08% respectively), followed by Mysuru, Kalaburagi and Belagavi divisions. The percentage coverage of sheep and goats during both years was highest in Mysuru (0.05% and 0.07%) division, followed by Kalaburagi, Bengaluru and Belagavi divisions. Pigs were not insured during 2019-20. The percentage coverage of pigs during 2020-21 was highest in Mysuru (3.93%) division, followed by Bengaluru, Belagavi and Kalaburagi divisions.

Milk unions of north Karnataka started insuring cattle and buffaloes from 2020-21 under Group Cattle Insurance Scheme, which was implemented since 2016 by the Milk unions of south Karnataka. Streamlining of insurance procedures, awareness among farmers and implementing officers, development of insurance infrastructure is yet to happen in the districts of north Karnataka, whereas these are already developed in south Karnataka. Thus, the number of dairy animals insured in north Karnataka is low. Further, the scheme targets allotted to the southern districts are high compared to other districts of Karnataka.

In north Karnataka districts most of the sheep and goat rearing is on extensive and nomadic system as a family occupation while, in south Karnataka districts farmers are involved in semi-intensive and intensive system of rearing with capital invested and mostly bank or scheme funded. Nomadic shepherds feel it difficult to insure their sheep/ goats and also claim the amount on death. Large herd size, lack of

interest and ignorance have added to the low percentage sheep and goat insurance.

Further, the demand for sheep and goat insurance was poor because of sheep ex-gratia scheme "Anugraha" wherein an amount of ₹ 5000 and ₹ 2500 will be disbursed to the shepherd on death of a sheep goat more than 6 and 3 months of age respectively. "Anugraha" was initiated in the year 2013-14 and continued up to 2019-20. The scheme was discontinued during 2020-21 but was again revived from 2021-22. During 2019-20, for death of 37,094 sheep and goats belonging to 32,297 beneficiaries a compensation of ₹1785.78 lakhs had been distributed as indemnity. Hence, the percentage of sheep and goat insured is very low.

In north Karnataka districts most of the pigs are maintained on scavenging while, in south Karnataka districts farmers are involved in semi-intensive and intensive piggery with capital invested. Further, the scheme targets allotted to the southern districts are high compared to other districts of Karnataka. Hence, the percentage of pigs insured is highest in southern divisions of Karnataka.

The findings are in consonance with that of Choudhary and Srinivasan (2011) who in their study on insurance schemes of government of India had reported that the Government of Rajasthan started three insurance schemes namely Kamdhenu, Bhais Bima and Avika Kavach schemes against death of cows, buffaloes, and sheep respectively. Under livestock and sheep insurance, the coverage was less than 5 per cent. Under sheep insurance, less than 1 per cent (0.7 %) of the total sheep population of the country were covered by the end of March 2009.

5.1.5.4 Trend in number of livestock insured under NLM in Karnataka

A perusal of Table 15 revealed that since the inception of NLM during 2006-

07 the number of insured livestock showed an upward trend peaking during 2015-16 (236332) and downward trend followed with 20555 livestock insured during 2020-21.

The growth in the number of livestock insured under NLM in Karnataka had no clear pattern, the decrease in the growth may be attributed to the shortage in funds allotted to the scheme during the respective financial year.

5.2 SOCIO-ECONOMIC PROFILE OF LIVESTOCK FARMERS

Distribution of farmers based on their socio-economic profile is presented in Table 16 and the results of each profile characters are discussed below under corresponding headings.

5.2.1 Age: The farmers in the study area were categorized into three age groups namely young, middle and old aged groups. Perusal of Table 16 revealed that majority of the farmers were middle-aged (56%) followed by young aged (25%) and old- aged (19%) in the LI adopters and among non-adopters' majority of the farmers were middle-aged (46%) followed by old- aged (35%) and young aged (19%).

It was observed that more than half (56 %) of the adopter respondents were middle aged (40-58 years), by that age they could have tried various means of income and finally chosen agriculture and livestock rearing as their profession. The young (20-39 years) were engaged in education and other occupations, their involvement in agriculture and allied sector was less hence only 25 per cent of adopter respondents were young aged followed by old aged (59-77) 19 per cent as they are physically bit low to sustain the hardship of agriculture and allied sector activities.

In LI non-adopters the old aged were more compared to youngsters. Laggardness in old aged people responsible for non-uptake of Livestock Insurance.

Age was negatively correlated but no significant relationship between age and adoption of insurance.

Similar results were observed in studies of Nepali (2021), Khan *et al.* (2012), Kumar (2016). Mohapatra *et al.* (2016) reported that majority of the LI adopters were middle aged followed by young and old aged. But findings were contrast with studies of Mann (2015) who reported that majority adopters were young followed by middle aged.

5.2.2 Sex: Careful observation of Table 16 revealed that, within the LI adopters' majority were males (77%) followed by females (23%). In the LI non-adopter category majority were males (94%) again followed by female (6%).

Majority of the respondents selected for the study were males which indicated the livestock rearing was labour-oriented and mainly involved male who was also the head of the family and owned the livestock assets. In LI adopter's category the female percentage seems to be more (23) compared to non-adopters (6) which reflected that the most of the females made their mind to adopt LI.

Similar results were observed in studies of Babalola (2014), Kumar (2016), Kandel (2019). Singh *et al.* (2019) reported that majority of LI adopters were male followed by female and proportion of female LI adopters among different herd sizes was more (in the small category. Findings were contrast with studies of Devkota *et al.* (2021) where female were more in non-adopters than in adopters. Both men and women participated equally in study conducted by Nepali (2021).

5.2.3 Education: A perusal of Table 16 revealed that majority of the LI adopters have completed high school (28%) followed by illiterates (20%), primary schooling

(19%), graduation and above (15%) and PUC (8%). Almost half of the LI non-adopters were illiterate (48%), followed by high school (15%), primary schooling (13%), middle school (12%), PUC (7%) and graduation and above (5%) of education.

In the present study education was positively corelated with LI adoption at 1per cent level of significance as we could see 48 and 5 per cent were illiterate and graduate and above respectively in LI non-adopters compared to the 20 and 15 per cent in LI adopters. Farmers with higher education by means of realization of the importance of LI and by better access to the sources of LI adopted more LI compared to farmers with no or little education.

Similar findings were observed in studies conducted by Nepali (2021), Subhash *et al.* (2016), Babalola (2014), Kumar *et al.* (2021), Khan *et al.* (2013), Singh and Chandel (2019), Mohammed and Ortmann (2005), Singh and Chandel (2019), Singh *et al.* (2019). Kandel (2019) reported that majority of the LI adopters had secondary and above education level. Contrast findings were observed in studies of Singh and Hlophe (2017). But in the study conducted by Devkota *et al.* (2021) the average years of schooling for both insured and non- insured were almost equal.

5.2.4 Family Type: From the Table 16 it can be noted that among the LI adopters' joint family holders had a slight majority (52%) over nuclear family (48%). Whereas in LI non- adopters' joint families were more (63%) compared to the nuclear family (37%).

It is evident from the results that almost equal number of adopter respondents had joint and nuclear families. In non-adopters nearly two-third were joint family holders. From the present study, it was found that the Pearson's correlation was not

significant between family types and LI adoption.

Similar findings were observed in studies conducted by Nepali (2021) i.e., more joint family. Contrast findings were observed in studies conducted by Kumar (2016).

5.2.5 Family size: Among the LI adopters' majority had small family size (91%) followed by medium (6%) and large (3%) family size. In non-adopters again majority had small family size (82%) followed by medium (11%) and large (7 %) family size.

In present era generally the family size is smaller. Family size is negatively correlated at 5 per cent level of significance between family size and the adoption of LI. Contrast findings were observed in study conducted by Subhash *et al.* (2016) who reported that the family size influenced positively on payment of LI premium. Bigger the family size, more was the probability of premium payment.

5.2.6 Primary occupation: LI adopters had animal husbandry (64%) as a main occupation, followed by agriculture (29%), business (3%) and salaried and agricultural labour (each 2%). LI non-adopters had animal husbandry (63%) as a main occupation, followed by agriculture (35%), business and salaried (1% each).

For both LI adopters and non-adopters' main source of income was animal husbandry and agriculture. Livestock owners were randomly selected for the sample, this consideration in sample selection might have influenced the results on occupation. Pearson correlation was found to be positive occupation and extent of LI adoption but non-significant.

Similar findings seen in study of Subhash *et al.* (2016), Singh *et al.* (2019), Khan *et al.* (2012). Mann (2015) reported that 49 per cent of the respondents were

dependent on livestock income only and the remaining 51 per cent of the respondents depended on mixed farming (dairy and agriculture). The findings were in contrast to the study conducted by Kaphle and Bastakoti (2017), Kumar (2016), Kandel (2019) in which main source of income (>75 %) was from agriculture only.

5.2.7 Secondary occupation: Table 16 unveiled that the LI adopters had agriculture (40%) as a secondary occupation, followed by, animal husbandry (37%), agricultural labour (12%), business (7%) and salaried (4%). LI non-adopters had animal husbandry (35%) as a secondary occupation, followed by agriculture (33%), agricultural labour (23%), business (6%) and salaried (3%).

Not much difference was observed in secondary occupation, animal husbandry and agriculture topped the list, followed by agriculture labour in which mostly the landless farmers in their free time go on wage employment for their livelihood. Similar findings seen in study of Subhash *et al.* (2016), Singh *et al*. (2019), Mann (2015), Khan *et al.* (2012). Nepali (2021) reported that nearly 58% of the LI adopters practiced income diversification with agriculture, business, service, labour, and remittance. The main source of income was agriculture and livestock.

5.2.8 Land holding: Among LI adopters' majority were marginal farmers (32%), followed by landless, small farmers (each 24%), medium farmers (9%), semi medium farmers (8%), large farmers (3%).

In the present study, Pearson's correlation between LI adoption and land holding is negatively (-0.314) correlated at 5 per cent level of significance. Higher the land holding more is the income and less will be the economic shocks experienced. Hence, the LI was adopted by the marginal, landless and small farmers compared to

large and medium farmers. Result is in line with study of Subhash *et al.* (2016) and Singh and Chandel (2019) who stated that farm size had negative effect on adoption of LI among the respondent farmers.

Results were in contrast with the study of Kumar *et al.* (2021) and Khan *et al.* (2013) stated that land holding showed positive and significant relationship at 5 per cent.

5.2.9 Experience in native Livestock rearing: Among LI adopters' majority had low experience (73%) followed by medium (23%) and high (4%). Among LI non-adopters' majority had low experience in native livestock rearing (54%) followed by medium (28%) and high (18%).

It is evident from the results that, better experience in native livestock rearing among non-adopters itself has negative influence of LI Adoption. Because of the experience in farming, knowing all the sensitive stages of maintaining native herd feel no need of LI. The results are in line with the findings of Subhash *et al.* (2016) who reported that, livestock farming experience had significant negative influence on adoption of LI.

5.2.10 Experience in cross bred livestock rearing: Table 16 revealed that among LI adopters' majority had low experience (48%) followed by medium (34%) and high (18%) experience in cross bred livestock rearing. Among LI non-adopters' majority had low experience in cross bred livestock rearing (80%) followed by medium (16%) and high (04%).

Crossbreds are different from native breeds which require every care all the time because of their sensitivity to varying external climate, feeding, management etc.

irrespective of experience, risks remain same and even risk realization is more as one get more experienced resulting adoption of LI.

Livestock farming experience had significant negative influence on adoption of LI in studies conducted by Subhash *et al.* (2016). Livestock rearing resulted in positive and significant relationship at 5 per cent level of significance in studies carried by Kumar *et al.* (2021), positive at 1 per cent level of significance in Khan *et al.* (2013) and Singh *et al.* (2019).

5.2.11 Livestock possession: Among LI adopters 'majority had low possession (76%) followed by medium (14%) and high (10%). Among LI non-adopters' majority had low (63%) livestock possession, followed by high (24%) and medium (13%) livestock possession.

Farmers with low livestock possession are at higher risks to any animal or production loss. Hence, almost 90 per cent of the LI adopters with medium to low livestock possession had insured their animals. Herd size had negative effect on adoption of LI as the farmers with larger herd size were relatively less vulnerable and had better risk absorption capacity. The results are in line with the findings of Subhash *et al.* (2016) who reported that herd size had negative effect on adoption of LI as the farmers with larger herd size were relatively less vulnerable and had better risk absorption capacity.

Singh *et al.* (2019) also stated that small farmers had insured maximum number of their total animals than the large farmers to combat the risks arising due to death of animal.

5.2.12 Possession of high yielding dairy animals: Among LI adopters' majority had low possession of high yielding dairy animals (62%) followed by, no possession (23%), medium number (11%) and high number (04%) of high yielding dairy animals. Among LI non- adopters' majority had not possessed high yielding dairy animals (85%) followed by low number of high yielding dairy animals (12%), high (02%) and medium (01%) number of high yielding dairy animals.

The presence of cross bred animals directly relates to the LI adoption. As the cross breeds requires high investment, higher market cost, high yielding, highly sensitive, higher mortality than the local breeds which directs to think about the risk managing tools like LI. Cross breed farmer would get higher income due to higher productivity making it affordable to pay premium amount.

In the present study, Pearson's correlation was used to know the relationship between possession of cross breed animals to the level of LI adoption, and it positively correlated (0.993) at 1 per cent level of significance. Likewise for native cattle holding to native cattle insurance which emerged negative (-0.25) and non-significant. Native buffalo holding to native buffalo insurance again negative (-0.106) and non-significant. Graded buffalo holding to Graded buffalo insurance- positive correlation (0.674) but non-significant. This indicates rearing high productive animals is risk prone and farmers adopted insurance accordingly. Results of present study in line with study done by Singh and Chandel (2019) who reported that rise in high yielding animals in the herd would motivate the farmers to go for the adoption of LI.

Devkota *et al.* (2021) observed that maintaining improved breeds would increase the adoption of LI by 37 per cent than those with local breeds.

5.2.13 Livestock procurement: Table 16 revealed that 62 per cent of the LI adopters', 53 per cent of the LI non-adopters' respondents procured animals by own investment. Nine per cent of the LI adopters procured animals through external finance while none of the LI non- adopters have procured animal by external finance. Sixteen per cent of the LI adopters purchased animals under schemes while no LI non-adopters have procured animals under schemes.

It is mandatory for the livestock farmers who procure animals through the schemes or bank funded projects to insure them. Hence, the results imply that the LI non-adopters had procured animals only through own investment or farm born.

The results are partly in line with Mishra (2014) who stated that farmers procured livestock mostly through their personal savings accumulated over a period of time instead of taking credit from money lenders or financial institutions. Therefore, livestock insurance received less attention in comparison to crop insurance.

5.2.14 Family income (lakh ₹ per annum): Among LI adopters' majority had low family income (88%) followed by medium (9%), high (03%) family income. Among LI non- adopters' majority had low family income (94%) followed by medium (04%) and high (02%) family income.

Correlation is significant (0.146) at 5 per cent level for the family income and LI adoption. As the family income increase their capacity to pay the premium of LI would be better. Results of present study are in line with study done by Duhan and Singh (2017), Devkota *et al.* (2021), Chizari *et al.* (2003). Similarly, Otieno *et al.* (2006) reported that, the higher the income from livestock the greater was the chance of adoption.

Contrast to our findings in study conducted by Subhash *et al.* (2016) who reported that household income showed significant negative influence on the adoption of LI. This might be attributed to the fact that farmers with higher income were relatively less vulnerable and would have better risk absorption capacity, therefore not interested in insuring their animals.

5.2.15 Social participation: A perusal of Table 16 revealed that 40 per cent of the LI adopters had no social participation while majority (86%) in LI non-adopters' category had no social participation. 43 per cent of the LI adopters participated in single organization while it was only 11 per cent in LI non-adopters. 16 per cent of the LI adopters participated in two or more organizations while it was only three per cent in LI non-adopters.

Social participation would improve the level of awareness, knowledge and the group psychology motivate in increasing the adoption of the technologies like LI. Significant relationship (0.341) at 1 per cent level was observed between social participation and LI adoption.

Results of present study in line with study done by Kandel and Timilsina (2018), Ghimire et al. (2016), Mahul and Stutley (2010). Kumar *et al.* (2011) stated that if a respondent is member of any groups or cooperatives the probability of LI adoption is more.

Contrast to our findings in study conducted by Singh and Chandel (2019) who observed the social participation to be statistically non-significant and considered to be not influencing the adoption of livestock insurance.

5.3 AWARENESS LEVEL AND ADOPTION OF LIVESTOCK INSURANCE

5.3.1 Information seeking behaviour of farmers

5.3.1.1 Extension participation: A perusal of Table 17 revealed that 91 per cent of the LI adopters had low extension participation while it was 99 per cent in LI non-adopters. Nine per cent of the LI adopters and one per cent in LI non-adopters had medium extension participation. None of the LI adopters and non-adopters had high extension participation.

Extension participation would increase the awareness, sources of different technologies available and their availability etc. Significant relationship (0.341) at 1 per cent level was observed for the extension participation and LI adoption. Results of present study in line with study done by Nepali (2021) and Mann (2015) who reported that 80 per cent of the insured respondent attended the training sessions or awareness camps and the remaining 20 per cent neither attended training nor camps.

5.3.1.2 Extension contacts: Careful study of Table 17 revealed that 97 per cent of the LI adopters and all (100%) LI non-adopters had low extension contact. Three per cent of the LI adopters and none (0%) of the LI non-adopters had medium extension contact. None of the LI adopters and non-adopters had high extension participation.

Regular interaction with extension agents and officers of line departments improved the awareness level and also the accessibility to the technologies and livestock schemes including insurance. Hence farmers with better extension contacts adopted LI more than those with lesser extension contact. Correlation was significant (0.438) at 1 per cent level for the extension contact and LI adoption. Results of present study in line with study done by Kandel (2019), Kandel and Timilsina (2018) who reported that extension contact of farmers affect positively for the adoption of LI.

5.3.1.3 Sources of information about livestock insurance: Adopters of livestock insurance garnered information from various sources which are grouped into three categories and the results are presented in Table 18 and explained in the following subheadings.

5.3.1.3.1 Personal cosmopolites sources (Formal): Majority of the insurance adopters received information from the DAHVS (52.3%) followed by MPCS or Milk unions (28%) and banks (19.7%). No information was acquired from the insurance companies or agents and NGO's.

5.3.1.3.2 Personal localities sources (Informal): Majority of the adopters of livestock insurance received information from their friends (53.7%) followed by progressive farmers (34.1%), family members (12.2%). No information was acquired from local leaders.

5.3.1.3.3 Impersonal cosmopolites sources (Mass media): No information was acquired from mass media about the LI by the LI adopters.

Source of information is important for any individual to gather the knowledge and with authenticity and confidence. Information source if from reliable and trusted source itself will have lot of impact on adoption. As discussed, earlier livestock insurance is facilitated primarily through the DAHVS, Milk unions and banks. These institutions had annual targets to be achieved thus they identify the beneficiaries communicate the information about the schemes or projects. Information acquired from the formal sources of LI is more passive than active. Family and peers also play an important role in disseminating the information.

It was observed that the insurance companies are involved in the livestock insurance only on social and policy obligations because of high claim ratio and these companies are making losses from this sector. As they are not actively involved, information dissemination from them on LI has taken a backstep. Further, none of the mass media are involved in promotion of LI unlike that of other insurance products which find advertisements in news dailies and magazines.

The results are in line with the findings of Kumar *et al.* (2011) who found that the government offices were the major source of information on LI. While the findings are in contrast with those of Kandel (2019), who stated that the 80 per cent LI adopted farmers acquired the awareness of LI from television. Mann (2015) stated that 15 per cent of the respondents agreed that they came to know about insurance from insurance agents.

5.3.2 Awareness level of livestock farmers on livestock insurance

Results on the awareness level of livestock farmers on livestock insurance are presented in Table 19 categorised under three different stages of availing and settlement of livestock insurance

5.3.2.1 General awareness on livestock insurance: Majority (81%) of the LI non-adopters had medium level of awareness. 95 per cent of the LI had high level of awareness and there were none with no awareness from both categories. Pearson correlation was significant (0.843) at 1 per cent level for general awareness on livestock insurance to the adoption of LI.

All the statements of general awareness on LI were known by LI adopters. Results were similar for LI non-adopters except on the statements related to premium

subsidy and mandatory livestock insurance in schemes.

5.3.2.2 Awareness on procedures in availing livestock insurance: On the procedures in availing livestock insurance majority (99%) of the LI adopters had medium to high level of awareness, while the majority (96%) of LI non-adopters had low to high awareness. Pearson correlation was significant (0.819) at 1 per cent level for awareness on procedures in availing livestock insurance to the adoption of LI.

Most of the LI adopters were aware of almost all the statements except on the statements on PTD, risk period and name of the insurance company from which they have availed LI. Non-adopters had very poor awareness level on most statements except on the statements on purchase of LI and ear tagging.

5.3.2.3 Awareness on claim procedures: On the procedures in claim settlement all (100%) LI adopters had medium level of awareness, while the majority (99%) of LI non-adopters had low to medium level of awareness. Pearson correlation was significant (0.796) at 1 per cent level for awareness on claim procedures to the adoption of LI.

Almost all LI adopters had awareness on all the statements related to claim settlement except on the statements on PTD and claim rejection due to preventable risks. Non-adopters had very poor awareness level on statements related to PTD, claim rejection due to preventable risks and intimation to insurance agency within 24 hours of death of the animal. But had awareness that LI should be claimed on death of livestock, importance of ear tag I claim settlement and PM should be conducted by the veterinarian.

Adopters of LI had availed livestock insurance for the livestock owned, mostly for being selected as beneficiary under any animal husbandry scheme or being funded by the bank. Dairy farmers who are members of MPCS had availed LI under group cattle insurance scheme so-motto. All adopters thus had complete awareness on the general information on LI because of the experience they had. PTD was rarely implemented under schemes, hence even the adopters had not availed PTD insurance resulting in low awareness about procedures in availing and settlement of PTD. Generally, animals will be examined for health issues by the veterinarian before insuring, so the chances of animal death during the pre-risk period are very minimal resulting in lack of experience by the farmer or his peers on this 15-day pre risk period. Most LI are facilitated by the DAHVS, Milk unions and Banks and farmers rarely come in contact or have any interaction with the insurance companies. Farmers are interested in the indemnity rather than the name of the company; they are directly dependent on the facilitators for availing and claim settlement of LI.

Non-adopters generally might have possessed sheep, goats, pigs, local breeds of cattle and buffalos and living far from veterinary dispensaries and MPCS or had poor extension contact. Non-selection as beneficiary in the schemes and non-receipt of credit from bank have kept them away from adopting LI which may be other reason for low general awareness in LI non-adopters. Whatever awareness they had were related to common knowledge which would have been acquired from the fellow farmers who had adopted LI.

The findings are in consonance with Kandel (2019) who reported that all the respondent LI adopters were aware of LI and majority of (75%) knew in non-adopters. Majority (82.5%) were aware of insurance procedure and premium subsidy schemesamong the LI adopters and only 32.5 per cent among the non-adopters.

Mohapatra *et al.* (2016) studied farmers knowledge on agricultural insurance in Punjab state and reported that about 38.00 per cent of the farmers had medium level of knowledge about the livestock insurance scheme. Whereas equal percentage (31.00) of the farmers had low and high level of knowledge. The results are partly in line with these findings.

5.3.3 Adoption of livestock insurance:

5.3.3.1 Factors influencing the adoption of livestock insurance: Results on the factors influencing adoption of livestock insurance is presented in Table 21 which revealed that the most important factor that influenced adoption was awareness and knowledge acquired by training and motivation by extension contacts (Average score 68.53) followed by positive personal and community experiences regarding livestock insurance (58.57), cannot afford loss of livestock (55.89), motivation by friends and community (54.08), affordable premium amount is due to the insurance schemes (53.09), exotic breed or breed from far away home tract and sensitive animals being reared (52.81), high purchase cost of the animal (47.75) and high productive animals (40.96).

Less important factors were compulsion for being selected as beneficiary in livestock scheme or subsidy (13.22), presence of insurance agents or bankers at rural and block level or in the vicinity (9.31), compulsion for availing loan for livestock farm project (5.33), disease prone locale (3.65) and poor animal health services in the locale (1.7).

The above results are the perceptions expressed by the LI adopters. All the livestock insured during 2019-20 and 2020-21 in Karnataka are either purchased under schemes or bank financed projects, or for been selected as beneficiary in government insurance schemes or voluntarily insured under Group Cattle Insurance

Scheme of milk unions. In most instances the facilitators identify the beneficiaries and motivate/ persuade to adopt LI as part of schemes or credit lent, hence, motivation by the extension contact is perceived as a major factor. Further the premium is subsidised in these schemes making it affordable to avail LI. Majority of the LI was through the group cattle insurance through milk unions which had subsidized premium hence, affordability of premium is perceived as an important factor. Group psychology and peer influence is an important factor in adoption of any technology which has also proved true from the above results. It was evident from the results that most LI adopters had taken insurance for the crossbred livestock owned rather than native because they are sensitive, highly productive and have high purchase cost; the same are perceived as important factors for adoption of LI.

Improved livestock health infrastructure, improved communication facilities may be the reasons behind less important factors related to animal health services, disease prone locale and presence of bankers or insurance agents in the vicinity.

Surprisingly “being selected as beneficiary” and “compulsion for availing loan” was not perceived as an important factor influencing adoption of LI by the farmers, even though most of the insurance was through the schemes or by bank financed projects. This may be because the implementing institutions deducted the amount for premium of the LI at their end before disbursing loan or milk payment which the farmers might have not felt.

The results are partly in line with Jitendra *et al.* (2018) who reported that personal factor affecting the adoption of livestock insurance was motivation mainly by friends and community members (98 weighted mean), followed by high probability of diseases occurrence in particular area (97.5), satisfactory response

received from insurance agencies (97), effective risk assessment and livestock insurance provides protection to dairy farming (94), high purchase cost of animal (93).

Mann (2015) from his study on the awareness and perception of dairy farmers towards cattle insurance in Punjab, reported that the 62 per cent of the respondents insured their animals by realizing the importance of LI, 31 per cent of the respondent insured their animals to reduce the risk of death of animal due to diseases, fatality etc. and only 7 per cent of the farmers insured just to obtain subsidy amount from government sponsored schemes. Further, farmers insured only part of their available animals due to huge premium amount, replacement, or sale of some of their animals due to less productive, poor health, defectiveness etc.

5.3.3.2 Number of livestock insured: Detailed observation of Table 22 revealed that only six native cattle, 231 crossbred cattle, 23 native buffaloes, 36 graded buffaloes, 144 native sheep, 81 crossbred sheep, 48 native goats, 30 crossbred goats, no native pigs and 10 crossbred pigs were insured by the 100 LI adopters in the study area.

Crossbred livestock have high purchase cost and are highly sensitive to the climatic conditions, diseases and disorders. But they are highly productive and income generation from these livestock is also high. In contrast, the native livestock breeds are sturdy to the climatic conditions and comparatively resistant to the diseases. But they are less productive and demand less investment for purchase or management. Thus, it can be concluded that the crossbred livestock rearing is more risk prone that rearing native livestock. Therefore, it can be observed form the results that majority of the livestock insured are crossbred.

Sheep and goats are neglected in insurance sector, in Kalaburagi it is recorded highest with 117 sheep as one of the respondents is under scheme 100+5 sheep which boosted the number. Now a days many are in to ram lamb fattening business get insured their stock if procured through financial assistance by any of the banks. Many insurance companies in north Karnataka are not insuring Pigs, reason they quoted was the company's stand.

Further, it was noted that the number and type of livestock insured per farmer was restricted as per the guidelines of the schemes or projects.

The results are in consonance with Singh *et al.* (2019) who reported that majority (87 %) of the respondent farmers insured only two animals. Out of the total 75 sampled households, 65 households insured two animals as benefit of subsidy was provided to maximum of two animals per family.

5.3.3.3 Reason for insuring livestock: Perusal of Table 23 revealed majority (77) of LI adopters had stated that risk transfer is a reason behind insuring livestock while, 23 adopters reasoned mandatory for scheme or loan. Except for Kalaburagi division more than 80 per cent of the adopters of other three divisions cited risk transfer as the reason for insuring livestock, whereas in Kalaburagi division almost equal percentage of adopters cited risk transfer and mandatory for scheme or loan as reason for insuring livestock.

Surprisingly majority of the LI adopters quoted risk transfer as the reason for adoption of LI, even though most of the insurance was through the schemes or by bank financed projects. This may be because the implementing institutions deducted the amount for premium of the LI beforehand at their end before disbursing loan or milk payment which the farmers might have not felt.

Findings of the present study are in agreement with Meuwissen *et al.* (2001) who conducted empirical analysis of Dutch livestock farmers on risk and risk management and revealed that animal price and production risks as important source of risks and reason for adoption of LI.

Nepali (2021) studied on farmers perception on status of livestock insurance in Surkhet district, reported that majority of livestock farmers agreed insurance as an effective risk management tool and the major reasons for adoption of LI were mortality of animal (75.55%), production loss (64.44%), high cost of animal (68.69%) and price risk (66.66%).

5.3.3.4 Sources of livestock insurance: Detailed study of Table 24 revealed 49 livestock owners availed LI through milk unions followed by, 32 from DAHVS and 26 from banks. None availed through insurance company/ agent or by own efforts. Milk unions were the major source of livestock insurance across study area followed by DAHVS and banks.

Claim amount to premium collected ratio for livestock insurance is more than one which makes livestock insurance a loss-making product for the insurance company. For any insurance product to be viable in long run this ratio should be less than 0.80 wherein the remaining 0.20 can be used for routine expenses of the company. The insurance companies are involved in LI due to their social and policy obligations. This substantiates their absence as the source of livestock insurance in the present study. Further, in the study period it is observed that none of the insurance companies provided livestock insurance when approached directly by the livestock farmer. Hence, insurance with own efforts was nil in the present study.

Total percentage and numbers of LI by the milk unions in Karnataka during the study period was the highest. Number of livestock insured through DAHVS was high during 2019- 20 in north Karnataka divisions and meat animals were insured through DAHVS (including KSWDC schemes). It is mandatory to insure all the livestock purchased under bank financed projects. This substantiates the above results on sources of livestock insurance.

The results of the present study are partly in agreement with Mann (2015) who reported that 54 per cent of the respondent purchased the insurance through government department schemes and 33 per cent by directly contacting insurance agent, 12 per cent through private bank agents and only 1 per cent by other means.

Rohith *et al.* (2019) from their analysis of the performance of cattle insurance in selected districts of Karnataka observed that number of animals insured were found to be higher under Group Cattle Insurance scheme (26278 to 37477) than NLM scheme (970 to 7360) in Kolar district during 2015–18.

Pallavi *et al.* (2019) in their study on assessing the financial viability of livestock insurance in Karnataka reported that to be financially feasible, the claim amount to premium collected ratio should be less than one for any scheme or company in the short run and to be less than 80 per cent in the long run considering the normal profit margin and cost of implementation of the scheme. The ratio was found to be 0.93 for Group Cattle insurance scheme for a period of eight years (2006-13) indicating the financial viability of the scheme in Karnataka which in turn is the reason for its widespread implementation and success.

5.3.3.5 Experience in livestock insurance: A perusal of Table 25 revealed that overall, among the adopters who insured through bank four had high experience, six had medium experience and 16 had low experience. Among the adopters who insured through DAHVS one had high experience, 10 had medium experience and 21 had low experience. Among the adopters who insured through milk unions none had high experience, 12 had medium experience while 37 had low experience.

Overall, the experience of farmers with respect to LI was very low, only the farmers with access to milk unions in south Karnataka, and some farmers who regularly take financial assistance through banks on dairy farming are have experience of LI. It is evident from the results of the previous headings that number of livestock insured is highest through milk unions followed by DAHVS and banks. Further, majority of the adopters facilitated by the three facilitators had low experience in LI indicating that the LI has picked up pace in the recent years in Karnataka.

5.3.3.6 Renewal of livestock insurance: Detailed observation of Table 26 revealed that **o**verall, 23 farmers who adopted LI, facilitated by milk unions had renewed LI followed by one farmer facilitated by bank and none renewed LI facilitated by DAHVS in the study area.

Renewal was high in the divisions of south Karnataka while, it was almost negligible in north Karnataka.

Majority of the milk unions of south Karnataka are implementing group cattle insurance regularly since 2016, the same is being implemented from 2020 in milk unions of north Karnataka. Renewal of insurance was easier for those farmers who insured through the milk unions because of regularity in the scheme and assistance

from the MPCS staff. Renewal is difficult or irregular through DAHVS as the insurance schemes are not regular and with varying targets and generally same beneficiary is not selected in the successive year. Bank facilitated insurance is not renewed once the loan account is closed.

The findings are in line with Subhash *et al.* (2016) who studied the status and determinants of livestock insurance in India and reported that, out of the insured, only about 11 and 6 per cent of the households have renewed the livestock insurance in study areas of states of Haryana and Rajasthan respectively. In Haryana and Rajasthan, the extent of livestock cover was poor and further the renewal of insurance policies by policyholders was still poor.

5.3.3.7 Level of satisfaction among the livestock farmers about LI: A perusal of Table 27 revealed that the level of satisfaction was highest and ranked first for "timely visits done by the implementing officers at all stages of insuring and claim" followed by, "guidance and support by scheme officers/ bankers/ insurance agents at all stages", "terms and conditions of insurance policy", "livestock insurance premium rate", "coverage of risks of livestock insurance policies", "ease of purchasing livestock insurance and its renewal" and last rank was for "claim procedure – ease and quickness".

It is observed by the results in the previous headings that most of the LI is covered through the schemes and bank financed projects. The concerned implementing institutions had the responsibility to educate, guide, implement the schemes and achieve the targets allotted while, the premium is also subsidized in these schemes. Further the formalities involved in availing insurance and settling claims were tedious which demanded lot of time, money and movement. Hence the results are as above.

The results are partly in agreement with the findings of Mann (2015) who from his study on the awareness and perception of dairy farmers towards cattle insurance in Punjab, reported that 43 per cent of the insured expressed their satisfaction over existing premium rate but 57 per cent showed dissatisfaction over high premium. Majority of the respondent expressed satisfaction over the services rendered by the veterinary officers and claim settlement. Majority of them felt insurance procedure was tedious.

Kumar (2016) in his study on impact study on LI in Mathura district reported that more than half of the respondents were pleased with the insurance personnel attitude (57.4 weighted mean score), half of the respondents were satisfied with the indemnity period (50), satisfaction on the time of visit at the animal deceased spot was not encouraging (35.71), LI premium rate (28.57), policy terms and conditions, loss estimation at claim settlement, risks covered (each 14.29), speed of settlement (7.14).

5.3.3.8 Relationship between Socio economic and psychological characteristics of livestock farmers and adoption of livestock insurance: Careful study of Table 28 revealed that education (0.279), total family income (0.146), social participation (0.443), extension participation (0.341), extension contacts (0.438) are positively corelated with adoption of livestock insurance. While, family size (-0.141) and age (-0.141) are negatively corelated with LI adoption.

Further, primary awareness on LI (0.819), awareness on insurance purchase (0.819), awareness on claim settlement (0.796) were positively corelated with the adoption of livestock insurance at 1 per cent level of significance.

Education, extension participation, extension contacts and social participation exposes the farmers to information and improves their awareness and knowledge level. Better extension contacts and extension participation improves their accessibility with the implementing officers and the chances of getting selected as beneficiary in the schemes also increases. Higher the income from AH high is the dependency on the livestock and the farmers cannot afford to loose the income source. Further, high total family income and income from AH makes insurance affordable. Hence, these factors have positive correlation with the adoption of livestock insurance.

With large land holding the farmers dependency on AH is generally low. Large farmers generally ignore animal husbandry and livestock are maintained for domestic utility rather than commercial or as livelihood option. Similarly, with large family size the income options are more and the dependency on livestock farm income is less. Hence, they are negatively correlated with adoption of LI.

Further, increased awareness on any technology or practice naturally results in increased adoption, the same applies to the adoption of LI.

5.3.3.9 Relationship between type of dairy animal possession and adoption of livestock insurance: A perusal of Table 29 revealed that cross breed cattle possession is positively corelated (0.993) with adoption of cross breed cattle insurance. Whereas for native cattle possession to native cattle insurance (-0.25), native buffalo possession to native buffalo insurance (-0.106) the correlation emerged negative and non-significant. Graded buffalo possession to graded buffalo insurance showed positive correlation (0.674) but non-significant.

Crossbred cattle and graded buffaloes are highly productive, the purchase cost is high, income from these livestock is also high. The investment on these livestock,

dependency on the income from them is high and the farmers cannot afford to loose these livelihood options. These high productive livestock are also sensitive to diseases and disorders and their rearing is risk prone. Hence, farmers rearing these crossbred cattle and graded buffaloes try avail insurance to these as a risk mitigation option.

The results from the present study are partly in agreement with Kumar *et al.* (2021) who studied the constraints experienced in adoption of livestock insurance by dairy farmers of Mathura district of Uttar Pradesh and reported that education and information source showed positive and significant relationship at 1 percent level of significance whereas, land holding and experience in livestock rearing showed positive and significant relationship.

Khan *et al.* (2013) in their study on willingness to pay for cattle and buffalo insurance: an analysis of dairy farmers in central India reported that as education level of farmers, landholding size, and dairy farming experience increase, the probability of willingness to pay for insurance also increases.

5.4 CONSTRAINT ANALYSIS OF LIVESTOCK INSURANCE

5.4.1 Constraints in livestock insurance

Data on constraints in livestock insurance for the livestock farmers, veterinarians, bankers and insurance agency staff was collected under general constraints, constraints in availing/ implementing LI, constraints in settlement of claim categories. The data was analysed and the constraints were ranked and presented in the tables.

5.4.1.1 Constraints of livestock farmers

5.4.1.1.1 General constraints of farmers in livestock insurance: A perusal of Table 30 revealed that the most important constraints as perceived by the LI adopters were "schemes are not available round the year and for everyone in the society" (Rank I) followed by "livestock insurance is not compulsory" (II), "only a limited number of animals per family can be insured under schemes" (III), "only scheme beneficiaries or loanee farmers are provided with LI for the animals purchased under loan or scheme and general farmers cannot purchase LI" (IV).

Major constraints for non-adopters were "livestock insurance is not compulsory (I), "native breeds don't need insurance – less productive, low risk in rearing, sturdy breeds" (II), "only scheme beneficiaries or loanee farmers are provided with LI for the animals purchased under loan or scheme – general farmers cannot purchase LI" (III).

5.4.1.1.2 Farmers' constraints in availing livestock insurance: Careful observation of Table 31 revealed that the major constraints faced in availing LI by LI adopters and non- adopters were alike, they were "high premium rates – not affordable (I), followed by "lengthy and complex insurance procedures" (II), "insurance is available for the select type of animals" (III).

5.4.1.1.3 Farmers' constraints in claim settlement: The major constraints faced by LI adopters were "delay in claim settlement" (I), followed by "high expenses involved in arranging people and vehicles for PM and disposal of the carcass (II), "lengthy and complex claim procedures" (III).

Major constraints for non-adopters are, “unsatisfied with the length of the indemnity period – we need ultra-short or lengthy periods” (I), “claim amount of the livestock is not based on present market value/ production performance – it is based on the insured amount only” (II) and “lack of awareness about the claim procedure” (III).

Presently livestock insurance is majorly covered by the schemes from the Government and Milk unions. These schemes are implemented through the guidelines which restrict the access to a limited group of people, limited species and type of livestock. Bankers are only concerned with the livestock famers who have availed loans for livestock projects and they facilitate LI to ensure that the loan repayment is fulfilled in case of any loss of livestock life. They safeguard their credit and rarely facilitate the farmers in renewal or continuation of LI after complete loan repayment.

Insurance premium is subsidised in the schemes, none of the insurance companies are providing LI when farmers approach directly so, majority of the farmers are habituated to subsidised premium. Premium rates for general livestock insurance are also comparatively higher. Different species and types of livestock are reared for different length of time but LI are not available for customized durations, they have fixed indemnity periods. Willingness to pay for the LI premium is also very poor among the farmers rearing low productive and native breed livestock and also for livestock reared for below three years duration (meant for slaughter), and if the income from livestock was not significant.

Procedures in availing LI and claim settlement have more paperwork and formalities, which are above the comprehension level of the farmers. Farmers are also busy with their farm activities and hence feel that these procedures to be complex and

cumbersome as they have to move away from their comfort zone and routine activities are hampered.

5.4.1.2 Constraints faced by Veterinarians

5.4.1.2.1 Constraints faced by Veterinarians in implementing livestock insurance: A perusal of Table 33 revealed that the major constraints faced by the Veterinarians were “Farmers ask for insurance when his animal falls sick” (Rank I), followed by “insurance subsidy amount not available round the year” (II), “farmers are not interested to insure their livestock without subsidy in the premium” (III).

5.4.1.2.2 Constraints faced by Veterinarians in settlement of livestock insurance: Observation of Table 34 revealed that the major constraints faced by the veterinarians in settlement of livestock insurance were “death of animal before retagging – delayed reporting of loss of tag by the farmer” (Rank I), followed by “repeated enquiry by the farmers until claim settlement” (II), “on rejection of the claim the veterinarian is projected as the culprit by all” (III).

5.4.1.3 Constraints faced by Bankers: A perusal of Table 35 revealed that the most important constraint faced by the bankers is “lack of awareness in farmers about the importance of livestock insurance (weighted mean score 91.5), followed by “delayed intimation of death of the animal (86), “lack of fool proof animal identification system” (83), “delayed submission of filled claim form, tag, post-mortem photos, veterinary post-mortem certificate and documents by farmer/veterinarian to bank” (82.5), “delay in claim settlement by insurance company” (75), “carelessness and poor management of the insured livestock by the farmers” (74.5), “claim payment less than insured amount” (71), “delayed dispatch of

documents (received from vet/ farmer) to the insurance company from bank" (66.5) and "difficulty to maintain insurance records of each animal at bank" (61).

5.4.1.4 Constraints faced by Insurance agency staff: A perusal of Table 36 revealed that the most important constraint faced by the insurance agency staff in implementation of LI are "lack of awareness in the farmers about the livestock insurance procedures" (weighted mean score 43) followed by remoteness of the area to be served" (42), "carelessness and poor management of the insured livestock" (38.5), "only animals under scheme or loan purchases are covered under insurance" (37.5), "difficulties in animal identification (tagging)" (35.5), "premium subsidization has adverse effect on general insurance" (34), "high operating cost" (30), "laborious" (29), "shortage of insurance agency staff to attend the cases of livestock insurance" (26).

Further, it can be noted that the most important constraint faced by the insurance agency staff in claim settlement is "delay in the intimation of the animal death (46), followed by "untimely submission of documents" (44), "high claim ratio (43.5), "fraud claims (40), "difficult to visit deceased animal on time due to other official engagements, remote location, and large area of coverage" (39), "shortage of insurance agents to attend the cases of insurance" (32) and "laborious claim settlement procedures" (31).

Veterinarians are the implementing officers of all the government schemes in animal husbandry sector. These schemes are not available round the year and the budget and targets allotted vary every year. Even though they are just implementing officers, they are at the receiving end for any complications during availing LI and also in claim settlement because of their easy accessibility.

Presently livestock insurance is majorly covered by the schemes from the Government and Milk unions. Beneficiary selection in government schemes is rarely repeated for the same farmer in the successive year, as a guideline to disburse the benefits of the scheme to all. Literally every year a new beneficiary is selected who has little or no experience in livestock insurance or has low knowledge level.

Fool proof animal identification system is the basic requirement in LI. Identification numbers on brass ear tags used earlier erased very early and loss of brass ear tags was very common and retagging procedures became an additional burden. To avoid this, in some rare instances, the brass tags were handed over to the livestock owners rather than applying to the livestock to keep them in a secure place, this resulted in fraudulences in LI claims. With plastic tags and bar-coded ear tags these problems are very negligible and it is almost not possible to remove and refix the tags to other animals. Advanced methods of animal identification are now available which can be adopted.

The implementing officers in the DAHVS, milk unions are overburdened due to shortage of staff and also have vast area to be covered and remote locations. With livestock healthcare being the priority job the paper work of LI takes a back seat. The same is also true with the insurance company which is also severely understaffed, and multiple insurance products to be addressed. This may result in delays in claim settlement.

Adverse selection or anti selection occurs if those more at risk (insuring old, diseased, debilitated animals and also, over valuation of the animal) purchase more insurance than others, without the insurer being aware of this. “As a result, the insurer’s expected indemnity outlays exceed total premium income, and, in the long run, the

insurance operation loses money". This also adds to the high claim amount to premium collected ratio compelling the company to reduce the claim payment.

Moral Hazard occurs when LI adopter change their behaviour after they purchase insurance in that way that the change increases the likelihood that they will collect insurance indemnities. It was also observed by the researcher that few livestock owners turn careless once the livestock are insured, they neglect the healthcare and other management practices, with an attitude that any how the animal death is compensated.

As human tendency, farmers also act during emergencies and don't prepare in advance. Poor willingness to pay for government services including livestock insurance, premium subsidization through schemes has added to it.

The records related to LI are maintained in hard copies at various levels in the DAHVS, milk unions, banks and insurance companies. With the number of LI increasing and high claims, maintaining the records become a huge task.

The findings are partly in agreement with Singh and Chandel (2020) who from their study on constraints faced by the dairy farmers and agencies involved in livestock insurance in Haryana reported that untimely submission of documents (I Rank) followed by non- adherence of dairy farmers to the rules and regulations of livestock insurance (II Rank), lack estimation of correct value of animal at time of insurance and claim (III Rank), lack of fool proof system of identification/ fraud claims (IV Rank), shortage of insurance agents to attend the cases of insurance (V Rank), the death of animal is not informed by the farmers in time (VI Rank), high claim ratio (VII Rank) are major constraints faced by insurance providers at the time of claim settlement.

Singh and Chandel (2020) in their study on constraints faced by the dairy farmers and agencies involved in Livestock Insurance in Haryana, reported that the major constraint faced by the farmers with LI policy in general are insurance is not done based on the actual market value (I rank) followed by, difficulties in the transfer of the policy (II rank), lengthy and cumbersome insurance procedure (III rank). Constraints faced by the farmers in buying the LI policy include possibility of insuring only selected animals (I rank) followed by lengthy and cumbersome procedure (II rank) and ack of awareness about government subsidies (III rank).

5.5. Suggestions for improvement in services and coverage of LI

Suggestions for improvement in services and coverage of LI were collected from the veterinarians, bankers and insurance agency staff. The data was analysed and the suggestions were ranked. Also, wants of the livestock farmers were collected and presented in percentages.

5.5.1 Livestock farmers' wants: Perusal of Table 37 revealed that the major wants of the LI adopters were "cover all animals in the herd/ owned by the farmers" (98%), followed by "avoid PM for all natural deaths and death due to diseases" (94%), "replace PM report with death certificates" (88%), "reduce the time involved in purchase of policy and claim settlement" (84%), "ease the process of insurance and claim – mobile based methods" (77%) and "decrease the premium rates/ free insurance" (65%).

Further it can be noted from the Table 37 that the most important wants of the LI non- adopters were "decrease the premium rates/ free insurance" (100%) followed by "cover all animals in the herd/ owned by the farmers" (97%), "avoid PM for all

natural deaths and death due to diseases" (76%), "reduce the time involved in purchase of policy and claim settlement "(72%) and "replace PM report with death certificates" (62%).

5.5.2 Suggestions of Veterinarians: Detailed study of Table 38 revealed the most important suggestion from the veterinarians was "LI should be open to all farmers and should be made compulsory for all animals held (weighted mean score 90.25), followed by "instead of compensation schemes government should fund insurance scheme to cover all the sections of the society and for all the domestic species" (89.75), "strict penalties should be imposed for those involved in malpractices related to LI" (89.00), "regular payment of health and PM certificate fees to the Veterinarian by the concerned" (87.50), "improvement in animal healthcare and diagnostic infrastructure and services by DAHVS, Milk unions and Veterinary Universities" (86.75), "insurance premium should be reduced to cover a larger mass" (85.50), "the time frame for settling the claim by company should be reduced" (85.25), "android app-based procedures for insuring livestock" (83.75), "education and awareness programs on livestock insurance should be undertaken on large scale" (83.00) "advanced and fool proof identification methods should be adopted" (77.25), "insurance provision for animal health expenses should be started – as in humans" (76.25).

5.5.3 Suggestions of Bankers: A perusal of Table 39 revealed that the most important suggestion from the bankers to improve service and coverage of livestock insurance was "to improve animal healthcare and diagnostic infrastructure and services" (weighted mean score 88.5) followed by, "education and awareness programs on livestock insurance should be undertaken on large scale" (88), "LI

should be open to all farmers (not just scheme beneficiaries/ loanee farmers) - and should be made compulsory for all animals held" (87.5), "strict penalties should be imposed for those involved in malpractices related to LI" (87.5), "android app-based procedures for insuring livestock" (85.5), "faster settling of the claim by insurance company" (85.5), "instead of compensation schemes government should fund insurance scheme to cover all the sections of the society and for all the domestic species" (84.5), "insurance premium should be reduced to cover a larger mass" (82.5), "advanced and fool proof identification methods should be adopted" (78.5).

5.5.4 Suggestions of insurance agency staff: A perusal of Table 40 revealed that the most important suggestion from the insurance agency staff to improve service and coverage of livestock insurance was "insurance premium should be reduced to cover a larger mass (25) followed by, "try to reduce the time frame for settling the claim" (12.5), "android app- based procedures for livestock insurance" (12), "instead of compensation schemes government should fund insurance scheme to cover all the sections of the society and for all the domestic species" (11), "all the information of the LI should be made available to the farmer through android app" (10), "LI should be open to all farmers and should be made compulsory for all animals held" (9), "advanced and fool proof identification methods should be adopted" (8.5).

The findings are partly in agreement with Singh and Hlophe (2017) who reported that most of the farmers indicated that the knowledge they have on the availability of livestock insurance was not adequate for them to decide whether to purchase livestock insurance or not. This means that farmers want to know more information on insurance for them to make an informed decision.

Nepali (2021) studied the farmers perception on status of livestock insurance in Surkhet district, reported that the farmers suggested premium subsidy and subsidy on feed, medicine or price of livestock rather than only on death of the livestock.

5.6 Duration of claim settlement: Detailed study of the Table 41 revealed that in general there were 12 steps in claim settlement, first step being death of the animal. DAHVS facilitated claim settlements had 09 steps while Banks and milk union facilitated claim settlements had 11 and 8 steps respectively.

Average duration taken for claim settlement facilitated through DAHVS was 50.21 days followed by bank (70.88 days), Tumakuru milk union (73.20 days), Mandya milk union (139.05 days), Belagavi milk union (149.60 days) and Ballari milk union was 136.19 days.

Claim settlement of animals facilitated through DAHVS revealed that first five steps would be completed within a day after death of animal including sixth which includes request for the claim. Dispatch of the claim form from insurance agency takes time to go through the letters received at the insurance office, and to send the claim form through dispatch section by post and receipt of the same by the veterinarian. All together it is taking average of 8 days. Eighth step involves the submission of claim form to insurance agency and average duration is three days. This may be the minimum number of days that a veterinarian would require write claim form along with the regular work. Last step which includes scrutiny of documents and deposition of indemnity to farmers account and duration is 38 days which is too high. This might be due to the formalities in the procedures, high workloads on staffs, shortage of staffs, a greater number of claims etc.

Claim settlement of animals facilitated through Bank revealed that first seven steps were completed within a day. Receipt of claim form takes 8 days. It includes duration from verification of letters received to the insurance office, and to send the claim form through dispatch section by post and to receipt of the same by the banker/veterinarian. Filling of claim form by veterinarians consuming three days which can be minimized by a day or two. Next step of posting filled claim form to insurance agency by bankers takes less than a day to post. Bankers are quick enough to send the received filled claim form to insurance agency. Average duration taken by insurance agency to settle the claim is seventy-nine days which is very high reasons might be the formalities in the procedures, high workloads on staffs, shortage of staffs, a greater number of claims etc.

Claim settlement process facilitated through milk union revealed that first four steps (from death of animal to conduction of PM) were completed within a day. The dataregarding intimation to vet,PM time, up sixth step was not obtained from milk unions. Claim form is available with the veterinarian. Submission of claim documents to the milk union is taking 26 days in Tumakuru milk union, 55,16 and 12 days in Mandya, Belagavi and Ballari Milk Union. The veterinarians in Mandya take more time followed by Tumakuru, Belagavi and Ballari. This may be due to more daily workload on the veterinarians and the number of the insured animals are more and also are the deaths in Mandya and Tumakuru compared to Belagavi and Ballari where less animals have been insured and a smaller number of deaths noticed in later districts.

Submission of claim documents to the Insurance company revealed highest of average 41 days in Belagavi, followed by 14, 6 and 4 days in Ballari, Tumakuru and

Mandya milk unions respectively. Belagavi recorded more days for compilation followed by Ballari as this scheme started for the first time in 2020-21 it would take some time to familiarize with the process, lack of training and shortage of staff in the procedures related to GCI Scheme.

Average duration for scrutiny and deposition of claim amount to the Milk union by insurance agency was 96, 47, 36, and 35 days in Ballari, Mandya, Belagavi and Tumakuru respectively. Insurance agency has taken more time to clear in Ballari milk union (96 days) which was doubled the days of Mandya and three times to Belagavi and Tumakuru milk unions. Reasons might be less numbers of staffs, procedural lapses in claiming procedures as it was the beginning year of implementation of GCI in Ballari milk union.

Similar findings were reported by IRMA (2008) on insurance schemes of Government of India stated that as per data compiled by the Department of Animal Husbandry, Dairying and Fisheries, the time taken for settlement of claims was up to three months.

Khan *et. al.* (2014) found that the mean time in claim settlement for livestock insurance was 104.5 days and one of the most important constraints faced by the farmers.

Trivedi and Soni (2014) studied cattle insurance in villages of Gandhinagar district and reported that farmers responded that the time taken for the claim settlement by the insurance company (1.5 to 2 months) was at satisfactory level but showed dissatisfaction on the amount of claim received.

Summary

VI. SUMMARY

Animal husbandry is one of the important economic activities in rural and semi-urban areas of our country contributing significantly to the national economy. Nearly two thirds of farm families in India are associated with one or the other form of livestock activity. Livestock is the backbone of farmers economy in rural India as it provides income to the farm families, more importantly the many landless and resource poor households, provides nutritious food, draught power to agriculture, offer cheaper transportation options and farmyard manure to enhance the soil fertility. Livestock provides employment throughout the year and act as insurance and ATMs in financial emergencies. Above all animal husbandry brings in sustainability to the agriculture.

This important livelihood asset of the farmers faces constant risks. The major risks include diseases and disorders, high sensitivity of cross breeds to the prevailing climatic conditions, high purchase price of livestock, ever increasing production expenses, high healthcare expenses, natural and man-made disasters, etc., leading to performance loss or disability of the animal rendering useless for the job reared for and sometimes even death resulting in severe economic loss for livestock owners.

It is well noted that livestock insurance is a relevant strategy in managing different risks related to livestock farming. Livestock insurance provides a lumpsum benefit to the insured if the animal listed in the policy dies from one of the perils specified in the contract. The adoption of livestock insurance among the livestock farmers is still very low and remains grossly neglected. The importance of livestock insurance is yet to be realized by the farmers and policy makers. Not many studies have been conducted on livestock insurance till date to highlight its awareness and constraints in India and in the state of Karnataka.

Considering the vitality of above-stated facts, the present study is an attempt to understand the status and trend of the livestock insurance in Karnataka, the level of awareness about the livestock insurance, its adoption among the livestock owners, identifying the gaps and constraints, and collecting suggestions from different stakeholders, presenting policy recommendations in enhancing level of awareness, addressing the challenges in adoption, implementation, and claim settlement with the following specific objectives;

1. To study the status of livestock insurance in Karnataka.
2. To study the level of awareness and adoption of livestock insurance among livestock owners.
3. To study the constraints in livestock insurance.

The study was undertaken purposively in the state of Karnataka. Sample district with highest (maximum) number of livestock insured during 2019 to 2021 was purposively selected from all the four-revenue division of Karnataka. The selected districts were Tumakuru from Bengaluru division, Mandya from Mysuru division, Ballari from Kalaburagi division and Belagavi from Belagavi division. Again, two taluks from each district were selected randomly for the study. They were Tumakuru and Koratagere from Tumakuru district, Mandya and Nagamangala from Mandya, Hoovina Hadagali and Hagari Bommanahalli from Ballari, Belagavi and Athani taluks from Belagavi district.

Sample respondents for the study included farmers (LI adopters and non-adopters), veterinarians, insurance agency staff and bankers dealing with the LI. Twenty-five each from LI adopters and non-adopters were selected randomly from the selected two taluks from each district totalling to hundred each of LI adopters and non-

adopters from eight taluks in the state. 200 Veterinarians, 100 bankers and 50 insurance staff across Karnataka state were randomly selected.

Data was collected using interview schedule in accordance with the objectives set. The data collected from the sample respondents were coded, tabulated, scored and presented in the form of tables and graphs. The various need based statistical tools like frequency and percentages, mean, weighted mean score, Garrett ranking, correlation, etc., were calculated and the inferences were drawn considering the results obtained, keeping in view the objectives laid in the study. Major findings of the study are

Status of livestock insurance in Karnataka

Livestock insurance was facilitated by the four facilitators in Karnataka namely, DAHVS, 14 District Cooperative Milk Producers' Unions, KSWDC and Public and Private Banks funding livestock purchases. It was also noted that none of the insurance companies provided livestock insurance when approached directly by the livestock farmer. Livestock insurance was provided only if facilitated through the above-mentioned facilitators. Participation of private sector insurance players was very minimum compared to the public sector.

Three types of risks in livestock rearing were covered under LI policies namely, death of livestock, PTD and Transit insurance.

Livestock insurance premium rates and identification methods

The premium rates of all insurance companies for one year indemnity vary between four and five per cent of the market value of the animal. Premium rates for three-year indemnity vary between 10 to 12 for the majority of the companies.

Additional one per cent premium is charged each for PTD and transit insurance. Under schemes the premium rates vary between 1.5 to 2.0 per cent for one year.

Most insurance companies and Milk Unions used plastic ear tags for identification of livestock, DAHVS uses 12-digit barcoded ear tags, while ICICI Lombard Rural Insurance is using muzzle print and RFID tags.

Cattle and buffaloes insured under schemes

In Karnataka state highest number of cattle and buffaloes were insured in 2020-21 (799836) than in 2019-20 (616219). The contribution of milk unions was huge (567176 and 790505) compared to DAHVS (49043 and 9331) in both financial years respectively.

Milk unions had the major share in the total number of cattle and buffalo insured during the year 2019-20 (92.04%) and 2020-21 (98.83%) while the contribution of DAHVS was a meagre during 2019-20 (7.96%) and 2020-21 (1.17%).

Meat animals (sheep, goats, and pigs) insured under schemes:

In Karnataka state highest number of meat animals were insured in 2020-21 (799836) than in 2019-20 (616219). DAHVS insured pigs, sheep, and goats during FY 2020-21 only while, KSWDC insured sheep and goats during 2019-20 and 2020-21. The number of meat animals insured through DAHVS was higher compared to KSWDC.

Percentage of livestock insured under schemes

2.14 per cent of the total livestock (cattle, buffaloes, sheep, goats, and pigs) of the state was covered under insurance during 2019-20 while the state coverage had improved to 2.81 per cent during 2020-21. The percentage of livestock covered was highest in Bengaluru division during 2019-20 (5.31%) and 2020-21 (6.12%), followed by Mysuru, Kalaburagi and Belagavi (0.15% and 0.33% respectively) divisions.

Division-wise analysis unveiled that the percentage of cattle and buffaloes covered by insurance during 2019-20 and 2020-21 was highest in Bengaluru division (15.75% and 18.08% respectively), followed by Mysuru, Kalaburagi and Belagavi divisions. The percentage coverage of sheep and goats during both years was highest in Mysuru (0.05% and 0.07%) division, followed by Kalaburagi, Bengaluru and Belagavi divisions. Pigs were not insured during 2019-20. The percentage coverage of pigs during 2020-21 was highest in Mysuru (3.93%) division, followed by Bengaluru, Belagavi and Kalaburagi divisions.

Awareness level and adoption of livestock insurance

Information seeking behaviour of farmers

Extension participation: 91 per cent of the LI adopters had low extension participation while it was 99 per cent in LI non-adopters. Nine per cent of the LI adopters and one per cent in LI non-adopters had medium extension participation. None of the LI adopters and non-adopters had high extension participation.

Extension contacts: 97 per cent of the LI adopters and all (100%) LI non-adopters had low extension contact. Three per cent of the LI adopters and none (0%) of the LI non-adopters had medium extension contact. None of the LI adopters and non-adopters had high extension participation.

Sources of information about livestock insurance: Among formal sources majority of the insurance adopters received information from the DAHVS (52.3%) followed by MPCS or Milk unions (28%) and banks (19.7%). No information was acquired from the insurance companies or agents and NGO's.

Among informal sources majority of the adopters of livestock insurance received information from their friends (53.7%) followed by progressive farmers (34.1%), family members (12.2%). No information was acquired from local leaders. No information was acquired from mass media about the LI by the LI adopters.

Awareness level of livestock farmers on livestock insurance

General awareness on livestock insurance: Majority (81%) of the LI non-adopters had medium level of awareness. 95 per cent of the LI adopters had high level of awareness and there were none with no awareness from both categories. Results were similar for LI non-adopters except on the statements related to premium subsidy and mandatory livestock insurance in schemes.

Awareness on procedures in availing livestock insurance: On the procedures in availing livestock insurance majority (99%) of the LI adopters had medium to high level of awareness, while the majority (96%) of LI non-adopters had low to high awareness. Non-adopters had very poor awareness level on most statements except on the statements on purchase of LI and ear tagging.

Awareness on claim procedures: On the procedures in claim settlement all (100%) LI adopters had medium level of awareness, while the majority (99%) of LI non-adopters had low to medium level of awareness. Non-adopters had very poor awareness level on statements related to PTD, claim rejection due to preventable risks and intimation time.

Adoption of livestock insurance:

Factors influencing the adoption of livestock insurance: The most important factor that influenced adoption was awareness and knowledge acquired by training and motivation by extension contacts, followed by positive personal and community experiences regarding livestock insurance, cannot afford loss of livestock, motivation by friends and community.

Number of livestock insured: Only six native cattle, 231 crossbred cattle, 23 native buffaloes, 36 graded buffaloes, 144 native sheep, 81 crossbred sheep, 48 native goats, 30 crossbred goats, no native pigs and 10 crossbred pigs were insured by the 100 LI adopters in the study area.

Reason for insuring livestock: Majority of LI adopters had stated that risk transfer is a reason behind insuring livestock while, 23 adopters reasoned mandatory for scheme or loan. Except for Kalaburagi division more than 80 per cent of the adopters of other three divisions cited risk transfer as the reason for insuring livestock, whereas in Kalaburagi division almost equal percentage of adopters cited risk transfer and mandatory for scheme or loan as reason for insuring livestock.

Sources of livestock insurance: 49 livestock owners availed LI through milk unions followed by, 32 from DAHVS and 26 from banks. None availed through insurance

company/ agent or by own efforts. Milk unions were the major source of livestock insurance across study area followed by DAHVS and banks.

Experience in livestock insurance: Overall, the experience of farmers with respect to LI was very low, only the farmers with access to milk unions in south Karnataka, and some farmers who regularly take financial assistance through banks on dairy farming had experience of LI.

Renewal of livestock insurance: 23 farmers who adopted LI, facilitated by milk unions had renewed LI followed by one farmer facilitated by bank and none renewed LI facilitated by DAHVS in the study area. Renewal was high in the divisions of south Karnataka while, it was almost negligible in north Karnataka.

Level of satisfaction among the livestock farmers about LI: The level of satisfaction was highest and ranked first for "timely visits done by the implementing officers at all stages of insuring and claim" followed by, "guidance and support by scheme officers/ bankers/ insurance agents at all stages".

Relationship between Socio economic and psychological characteristics of livestock farmers and adoption of livestock insurance: Education (0.279), total family income (0.146), social participation (0.443), extension participation (0.341), extension contacts (0.438) are positively corelated with adoption of livestock insurance. While family size (-0.141) is negatively corelated with LI adoption.

Further, primary awareness on LI (0.843), awareness on insurance purchase (0.819), awareness on claim settlement (0.796) were positively corelated with the adoption of livestock insurance at 1 per cent level of significance.

Relationship between type of dairy animal possession and adoption of livestock insurance: Cross breed cattle possession is positively corelated (0.993) with adoption of cross breed cattle insurance. Whereas for native cattle possession to native cattle insurance (-0.25), native buffalo possession to native buffalo insurance (-0.106) the correlation emerged negative and non-significant. Graded buffalo possession to graded buffalo insurance showed positive correlation (0.674) but non-significant.

Constraint analysis of livestock insurance

Constraints of livestock farmers: Among the general constraints of farmers in livestock insurance the more important constraints as perceived by the LI adopters were "schemes are not available round the year and for everyone in the society" followed by, "livestock insurance is not compulsory", "only a limited number of animals per family can be insured under schemes", "only scheme beneficiaries or loanee farmers are provided with LI and general farmers cannot purchase LI".

Among the constraints in availing livestock insurance the major constraints faced by LI adopters were "high premium rates" followed by "lengthy and complex insurance procedures", "insurance is available for the select type of animals". Further, the most important and less important constraints for LI non-adopters are same as that of LI adopters.

Among the constraints in claim settlement the major constraints faced by LI adopters were "delay in claim settlement" followed by, "high expenses involved in arranging people and vehicles for PM and disposal of the carcass", "lengthy and complex claim procedures". While the major constraints for non-adopters were "unsatisfied with the length of the indemnity period", "claim amount of the livestock is

not based on present market value/ production performance and based on the insured amount only".

Constraints faced by Veterinarians: Major constraints faced by Veterinarians in implementing livestock insurance were "Farmers ask for insurance when his animal falls sick" followed by, "insurance subsidy amount not available round the year", "farmers are not interested to insure their livestock without subsidy in the premium".

Most important constraints faced by veterinarians in settlement of livestock insurance were "death of animal before retagging – delayed reporting of loss of tag by the farmer", followed by "repeated enquiry by the farmers until claim settlement", "on rejection of the claim the veterinarian is projected as the culprit by all".

Constraints expressed by Bankers: Most important constraints in livestock insurance as per the banker's opinion were "lack of awareness in farmers about the importance of livestock insurance" followed by, "delayed intimation of death of the animal", "lack of fool proof animal identification system", "delayed submission of filled claim documents by farmer/veterinarian to bank, "delay in claim settlement by insurance company".

Constraints faced by Insurance agency staff: Most important constraint faced by the insurance agency staff in implementation of LI are "lack of awareness in the farmers about the livestock insurance procedures" followed by, "remoteness of the area to be served", "carelessness and poor management of the insured livestock", "only animals under scheme or loan purchases are covered under insurance" and "difficulties in animal identification".

Further, the most important constraint faced by the insurance agency staff in claim settlement is “delay in the intimation of the animal death”, followed by “untimely submission of documents”, “high claim ratio and “fraud claims”.

Duration of claim settlement: In general, there were 13 steps in claim settlement wherein the death of the animal is considered as first step. Average duration taken for claim settlement facilitated through DAHVS was 50.21 days followed by bank (70.88 days), Tumakuru milk union (73.20 days), Mandya milk union (139.05 days), Belagavi milk union (149.60 days) and in Ballari milk union it was 136.19 days.

Implications and recommendations of the study:

- The study assessed the status of livestock insurance in Karnataka, the types of risks covered, facilitators and insurance providers, prevailing insurance premium rates, schemes promoting livestock insurance, awareness level of livestock farmers, information seeking behaviour of the livestock farmers with respect to the livestock insurance, adoption of livestock insurance, factors influencing adoption, level of satisfaction of adopters, constraints in livestock insurance and duration of claim settlement. Looking into its contribution as an important risk mitigation tool, due importance should be given to livestock insurance along with other animal husbandry related policies of the state.
- It was observed that LI was available to scheme beneficiaries or farmers who had availed bank credit. Further, even the beneficiaries cannot insure all the livestock owned by them, the number, species, and type of livestock covered under scheme was also restricted by the guidelines. None of the farmers had direct access to the LI. This curtailed the penetration of this important risk mitigation tool. Thus, LI should be open to all farmers and should be made compulsory for all animals held.

- Insurance premium rates for livestock insurance is higher than all other insurance products. The insurance companies do not provide insurance to the farmers who directly approach them and provide insurance to the livestock purchased under loans or schemes as part of social and policy obligations. They state that they are not actively involved in livestock insurance because of high claim amount to premium collected ratio, which is above 1. But the claim ratio in LI is around 2 per cent. This implies that if the number of animals covered is increased substantially the claim ratio will further go down and the claim amount to premium collected ratio can be reduced to below 0.80 to make it viable. The coverage can be increased if the insurance premium for LI is reduced which trigger the LI adoption in higher percentage.
- Livestock insurance is unpopular because of few fraudulences reported. Advanced and fool proof identification methods like RFID tags, biometry-muzzle imprints, Artificial intelligence in animal identification (using multiple photographs from different angles) etc., can be used to prevent the frauds in claims and also motivate the insurance providers to actively get involved in LI. Strict penalties should be imposed for those involved in malpractices related to LI. The insurance agent should visit the farmers and livestock at the time of health check-up, tagging, death and post-mortem, these actions can avoid the frauds in LI.
- As most of the farmers have access to android mobiles and are well versed with its usage, android app-based procedures can be adopted in livestock insurance. All the information of the LI, viz., renewal date, premium amount, policy documents (proposal form, policy, claim form, health certificate, retag certificate, PM certificate etc.) should be made available to the farmer through android app. Uploading animal photos/ uploading proposal form/ claim form by farmer/

uploading health/ retagging/ PM certificate/ death intimation letter by veterinarian and uploading bank passbook. This provides ready information to the farmers, procedures of LI would be transparent which helps in building confidence of the farmers in LI. Inclusion of alert message for all the stake holders on renewal, claim date and amount through the app would be a great idea.

- It was observed that the duration of claim settlement was high. Steps should be taken to see that the claims are settled within 15 days. Automation of the claim settlement procedures, using electronic means over hard copies of documents/ certificates/ reports would save a lot of time. The time frame for settling the claim by company should be set. Further, complement payment (100%) of the indemnity should be assured.
- It was noted from the study that lack of awareness among the farmers was a major hurdle in adoption of LI. It is recommended that education and awareness programs on livestock insurance should be undertaken on large scale in a campaign mode.
- Improvement in animal healthcare and diagnostic infrastructure and services would reduce the death rate and loss in livestock farming. This in turn reduces the claim ratio further and the viability of LI product would improve motivating other private players to enter livestock insurance and improve the services.
- Presently loss of life is primarily covered, but there are other losses in animal husbandry viz., huge health expenses, loss in production and performance. Hence, it is recommended to promptly include and implement PTD to all insured livestock and also try health insurance (Insurance provision for animal health expenses (surgery and costly treatment) should be started – as in humans) in livestock on pilot basis.

- Weather linked insurance over loss in milk yield is presently being implemented on pilot basis in Punjab. Milk production is severely affected by the Temperature-Humidity Index (THI), it decreases in cross bred cows by 35-40% when THI increases by 72.
- Livestock farming involves different species and types reared for varying periods, hence, fixed indemnity periods may not suit all. Customized indemnity periods should be offered to interested farmers with special premium prices which further increases the coverage. Premium rate should be fixed taking into consideration 1) animal species, 2) category of animal (fattening, breeding, egg production etc.); 3) level of risk.
- Livestock insurance company on the lines of Agriculture Insurance Company of India Ltd. should be created to promote LI and to mitigate the risks in livestock farming.
- Regular payment of health and PM certificate fees to the Veterinarian by the concerned, incentives to insurance agents, would also motivate the implementing officers and insurance agents in working towards providing better services to the livestock farmers.

Bibliography

VII. BIBLIOGRAPHY

AHMAD, S., KOUR, G., SINGH, A. and GULZAR, M., 2019. Animal Genetic Resources of India – An Overview. *Int. J. Livest. Res*., **9**(3): 1-12.

AINA, O. S. and OMONONA, B. T., 2012. Nigerian Agricultural Insurance Scheme (NAIS): Prospects, achievements, and problems. *Glob. Adv. Res. J. Agric. Sci.*., **1**(5): 97–103.

AJIEH, P. C., 2010. Poultry Farmers' Response to Agricultural Insurance in Delta State, Nigeria. *J. Agric. Sci.*, **1**(1): 43-47.

ANNUAL SEASON and CROP REPORT, 2015. Directorate of Economics and Statistics, Bengaluru.

ANONYMOUS., 2011. Report of the working group on Animal Husbandry and Dairying, 12th Five Year Plan (2012-2017) submitted to Planning Commission, GOI, New Delhi, pp: 17- 20.

AUGUSTINE, C. M., JA'AFAR-FURO, A. and MUHAMMAD, R., 2010. Effects of level of awareness of pig rearers about swine flu on markets prices of pigs in Mubi zone, Nigeria. *Am. Eurasian J. Agric. Environ. Sci.,* **7**(5): 607-610.

BABALOLA, A. D., 2014. Determinants of farmers' adoption of agricultural insurance: The case of poultry farmers in Abeokuta metropolis of Ogun state, Nigeria. *Br. Poult. Sci.*, **3**(2) :36-41.

BASUNATHE, V. K. and TRIPATHI, H., 2017. ICT using behavior and perceived information needs of the livestock farmers in aAQUA and Warna wired village ICT projects in Maharashtra state. *Indian Research Journal of Extension Education.*, (Special issue on Veterinary Research & Extension):89-96.

BIRTHAL, P. S. and TANEJA, V. K., 2012. Operationalizing the pro-poor potential of livestock: Issues and strategies. *Indian J. Anim. Sci.*, **82** (5): 441-447.

BIRTHAL, P. S. and TANEJA, V. K., 2006. Livestock sector in India: Opportunities and challenges for small holders. *In:* proceedings of a workshop on small holder livestock production in India: Opportunities and challenges, Jan 31st - Feb 1st, 2006, Delhi, pp 12- 18.

BORA, N., 2017. Vulnerability of the livestock sector in changing climate conditions: A case from India. *Int. J. Environ. Agric. Biotech.*, **2**(1): 289-296.

CAI, J. and SONG, C., 2013. Do Hypothetical Experiences Affect Real Financial Decisions? Evidence from Insurance Take-up. *In*: proceedings Cai2013DoHE, https://mpra.ub.uni- muenchen.de/46862/1/MPRA_paper_46862.pdf.

CHAUHAN, A., PATEL, B. H. M., MAURYA, R., KUMAR, S., SHUKLA, S. and KUMAR, S., 2016. Pig production system as a source of livelihood in Indian scenario: An overview. *J. Int. Agric. Ext. Educ.,* **5**(4): 2089 – 2096.

CHIZARI, M., YAGHOUBI, A. and LINDNER, J. R., 2003. Perceptions of rural livestock Insurance among live- stock producers and insurance specialists in Isfahan Province, Iran. *J. Int. Agric. Ext. Educ.*, **10**(1): 37–42.

CHOUDHURY, M. and SRINIVASAN, R., 2011. A study on insurance schemes of government of India (Final Report). National Institute of Public Finance and Policy, New Delhi. Retrieved from http://www.nipfp.org.in/media/ medialibrary / 2013/08/ insurance_ report_ final.pdf.

DADF., 2020. Basic Animal Husbandry Statistics. Department of Animal Husbandry, Dairying and Fisheries. Government of India.

DEVKOTA, D., GHIMIRE, Y. N., TIMSINA, K. P., SUBEDI, S. and POUDEL, H. K., 2021. Determinants of livestock insurance adoption in Nepal, *Cognet. Food. Agric*., **7**(1): 1-12.

DUHAN, A. and SINGH, S., 2017. Factors affecting awareness level of farmers about crop insurance: A case study of Haryana. *Asian Journal of Agricultural Extension, Economics & Sociology.*, **21**(4): 1-7.

FAO., 1992. Statistical Yearbook – World Food and Agriculture Organization.

FAO., 2021. Statistical Yearbook – World Food and Agriculture Organization.

GARRETT, H. E., 1981. Statistics in Psychology and Education, Vakils, Feffer and Simons Pvt. Ltd. Bombay.

GHIMIRE, R. and KUMAR, P., 2014. Agricultural insurance products in Nepal: Practice and prospects (January 5, 2014). Available at SSRN: https://ssrn.com/abstract=2374820 or http://dx.doi.org/10.2139/ssrn.2374820 pp:1-17.

GHIMIRE, Y. N., TIMSINA, K., KANDEL, G., THAPA M. D. B., GAUTAM, S. and SHARMA, B., 2016. Agriculture Insurance in Nepal: Case of Banana and Livestock Insurance, NARC Publication Serial No. 00274-088/2015/16., (July): pp:1–12.

GOUDAPPA, S. B., REDDY, B. S. and CHANDRASHEKHAR, S. M., 2012: Farmer's perception and awareness about crop insurance in Karnataka. *Indian J. Ext. Educ*., **2** (SP): 218-222.

IRMA., 2008. Evaluation of Livestock Insurance Scheme, Institute of Rural Management Anand, Report Submitted to Dept of Animal Husbandry, Dairying & Fisharies, Ministry of Agriculture, Govt of India.

JOKHIO, S., ABRO, M. M. and ALAALI, L., 2016. Managing risk in livestock farming: The role of insurance companies. *International Journal of Financial Research*., **7**(2): 64–72.

KANDEL, G. and TIMILSINA, R., 2018. Factors affecting the adoption of livestock insurance by dairy farmers in Nawalparasi district. *Nepalese Journal of Agricultural Science.*, **16**: 58-65.

KANDEL, G., 2019. Farmers' awareness and perception about livestock insurance: A case from Nawalparasi district of Nepal. *Acta Scientific Agriculture*., **3**(6): 117-121.

KAPHLE, M. and BASTAKOTI, N., 2017. Livestock insurance as a coping strategy against economic loss and food insecurity: a case from rural communities of Nawalparasi district Nepal. Journal of International Development., Published

online in Wiley Online Library (wileyonlinelibrary.com) DOI: 10.1002/jid.3299

KENCHANAGOUDRA, S. M., 2007. An analytical study on Sampoorna Grameen Rozgar Yojana in Gadag district of Karnataka state. M.Sc. thesis submitted to University of Agricultural Sciences, Dharwad, India.

KHAN, M. A., CHANDER, M. and BARDHAN, D., 2014. Constraint in cattle and buffalo insurance. *Indian J. Dairy Sci*., **67**(2): 187-191.

KHAN, M. A., CHANDER, M. and BARDHAN, D., 2013. Willingness to pay for cattle and buffalo insurance: an analysis of dairy farmers in central India. *Trop. Anim. Health. Prod.*, **45**(2): 461-468.

KOIRALA, A. and BHANDARI, P., 2018. Livestock insurance a tool to reduce economical loss of farmers from climate change related hazards. *Insights Vet. Sci.,* **2**: 05-08.

KUMAR, D. S., BARAH, B. C., RANGANATHAN, C. R., VENKATRAM, R., GURUNATHAN, S. and THIRUMOORTHY, S., 2011. An analysis of farmer's perception and awareness towards crop insurance as a tool for risk management in Tamil Nadu. *Agric. Econ. Res. Rev*., **24**(1): 37–46.

KUMAR, J., 2016. Impact study on livestock insurance in Mathura district. Master's thesis submitted to Uttara Pradesh Pandith Deen Dayal Upadhyaya Pashu Chikitsak Vigyan Vishwa Vidyalaya, Mathura.

KUMAR, J., SINGH, S. K., SINGH, A. and RASHMI., 2017. Factors affecting adoption and level of satisfaction among dairy owners towards livestock insurance. *Int. J. Vet. Sci*., **04**: 15-18.

KUMAR, J., SINGH, S. K., SINGH, A. and SHARMA, D., 2018. Factors influencing the willingness for adoption of livestock insurance among dairy owners. *Int. J. Livest. Res*., **8**(9): 220-227.

KUMAR, J., SINGH, S. K., SINGH, A. and RASHMI., 2021. Constraints experienced in adoption of livestock insurance by dairy farmers of Mathura district of Uttar Pradesh. *Haryana Vet*., **60**(1): 13-16.

KUMBHARE, S. L., SHARMA. K. N. S. and PATEL, R. K., 1983. Standardisation of Bovine Units. Indian J. Anim. Sci., 53(5): 543-547.

LIVESTOCK CENSUS., 2019. All India Report. Ministry of Fisheries, Animal Husbandry and Dairying. Animal husbandry Statistics Division. Krishi Bhavan, New Delhi.

MAHUL, O. and STUTLEY, C. J., 2010. Government support to agricultural insurance: Challenges and options for developing countries. The World Bank. Web site http://www.insuranceforthepoor.org.

MANN, A., 2015. Awareness and perception of dairy farmers towards cattle insurance in Punjab. Master's Thesis submitted to Punjab Agricultural University, Ludhiana.

MEUWISSEN, M., HUIRNE, R. B. M. and HARDAKER, J., 2001. Risk and risk management: An empirical analysis of Dutch livestock farmers. *Livest. Prod. Sci*., **69**: 43-53.

MINHAJ, S., KHANDI, S., BAFANDA, R., BHUSHAN, B., CHOUDHARY, F. and KHATEEB, A., 2018. Constraints perceived by dairy farmers in the adoption of improved animal husbandry practices in Doda district. *Int. J. Livest. Res.*, **9**(2): 319-326.

MISHRA, C. S., 2014. Livestock insurance: Still a distant dream for tribal communities of Koraput tract, Odisha, India. *Glob. Adv. Res. J. Agric. Sci*., **3**(6) :175-178.

MOHAMMED, M. A. and ORTMANN, G. F., 2005. Factors influencing adoption of livestock insurance by commercial dairy farmers in three zobatat of Eritrea. *Agrekon.*, **44**(2): 172-186.

MOHAPATRA, L., DHALIWAL, R. K. and DHALIWAL, H. S., 2014. Performance of agricultural insurance in Punjab State of India. *Indian Research Journal of Extension Education.*, **14**(3): 115-118.

MOHAPATRA, L., DHALIWAL, R. K. and KAUR, M., 2016. Farmers knowledge about the agricultural insurance scheme in Punjab. *Indian Research Journal of Extension Education*., **16**(1): 49-53.

NAHAS, U., SAM, I. and NEHOVA, N., 2018. A study of factors that influence livestock insurance adoption by livestock farmers in Namibia, *Int. J. Agric. Sci.*, **8**(6): 1457-1464.

NAIR, S., TANNIRKULAM, A. and MARY, D., 2020. Evaluating the efficacy of an app-based livestock insurance scheme in Gujarat, India, 3ie formative evaluation report. New Delhi: International Initiative for Impact Evaluation (3ie).

NEPALI, B., 2021. Farmers' perception on status of livestock insurance in Surkhet district, Nepal. *Agric. Nat. Resour*., **4**(2): 110-123.

NJAVRO, M., PAR, V. and PLESKO, D., 2007. Livestock insurance as a risk management tool on dairy farms. *Poljoprivreda*., **13**(1):78-82.

OTIENO, D. J., KOSURA, W. O., KARUGIA, J. T., DRUCKER, A. and REGE, E., 2006. Risk management in small- holder cattle farming: A hypothetical insurance approach in Western Kenya. Contributed paper prepared for pre-sentation at the 26th International Association of Agricultural Economists Conference, Gold Coast, Australia, August 12–18, 2006.

PALLAVI, G. L., SINGH, A., CHANDEL, B. S., SENDHIL, R. and LATHWAL, S. S., 2018. Evaluation of alternate animal identification techniques and livestock insurance products in Bengaluru rural district of Karnataka. *Indian J. Econ. Dev*., **6**(9): 1-9.

PALLAVI, G. L., SINGH, A., CHANDEL, B., SENDHIL, R., LATHWAL, S. and DHRUVA, V., 2019. Assessing the financial viability of livestock insurance in Karnataka. *Int. J. Livest. Res.,* **9**(12): 79-89.

PRABHU, N., 2015. Milch cattle, buffaloes to be covered under livestock insurance. The Hindu. Retrieved from http://www.thehindu.com/news/national/Karnataka/milch–cattle–buffaloes–to–be–covered-under-livestockinsurance/article 7492039.

RAJU, S. S. and CHAND, R., 2007. Progress and problems in agriculture insurance. Policy brief 13, National Centre for Agricultural Economics and Policy Research, New Delhi, India.

ROHITH, G. V., DIXIT, P. K. and JEYAKUMAR, S., 2019. Performance of cattle insurance in select districts of Karnataka. *J. Anim. Res*., **9**(3): 431-438.

SAHU, D., 2017. Economic analysis of Livestock insurance scheme as a risk management tool in Bhanjanagar subdivision of Ganjam district in Odisha. Krishikosh. http://krishikosh.egranth.ac.in/handle/1/5810035868

SHARMA, A., 2014. Livestock insurance: lessons from the Indian experience. Institute for Financial Management and Research Centre for Insurance and Risk Management.

SINGH, A. S. and HLOPHE, N. M., 2017. Factors affecting adoption of livestock insurance: A case study of livestock farmers in Manzini region, Swaziland. *Res. J. Agr. Forest. Sci*., **5**(8): 6-14.

SINGH, A., KUMAR, P., KUMAR, H., NEERAJ, A., KUMAR, P. and KOUR, G., 2020. Status of livestock insurance in India and a complete guide: An evidence-based review. *Int. J. Livest. Res*., **10**(5): 8-19.

SINGH, K., 2009. Rural Development: Principles, Policies and Management, Edition:3, Publisher: SAGE Publications India Pvt Ltd, Publication year:2009. pp:122.

SINGH, S. P. and CHANDEL, B. S., 2019. Factors influencing in adoption of livestock insurance with special reference to Haryana. *Indian J. Dairy Sci.*, **72**(3): 336-341.

SINGH, S. P. and CHANDEL, B. S., 2020. Constraints faced by the dairy farmers and agencies involved in livestock insurance in Haryana, India. *Agric Sci. Digest*., **40**(1): 95- 99.

SINGH, S. P., CHANDEL, B. S. and HORO, A., 2016. Is that high claims plug widening of livestock insurance scheme? A case study of Haryana State. *Indian J. Econ. Dev.*, **12**(1a): 525-530.

SINGH, S. P., CHANDEL, B. S., JAISWAL, P. and ADARSHA, L. K., 2019. Profile of dairy animals covered, and farmers adopted livestock insurance in Karnal district of Haryana. *Indian J. Econ. Dev*., **15**(1): 68-76.

SUBHASH, C., 2002. Capacity building of informal institutions through watershed management programs in hilly area: An experience in Nilgiris. *National bank News reviews*., **18**(4): 43- 49.

SUBHASH, C., KUMAR, A., BHATTARAI, M. and SAROJ, S., 2016. Status and determinants of Livestock Insurance in India: A micro level evidence from Haryana and Rajasthan. *Indian J. Agric. Econ.*, **71**(3): 335-346.

SUNDAR, J. and RAMAKRISHNAN, L., 2013. A study on farmers awareness, perception and willing to join and pay for crop insurance. *Int. J. Bus. Manag. Invent.*, **2**: 48-54.

THOMAS, D., UTE, L. and ISABEL, F., 2004. Constraints and potential of livestock insurance schemes - A case study from Vietnam. Institute of Agricultural Economics and Social Sciences in the Tropics and Subtropics (Ed.)

TIMSINA, K. P., GHIMIRE, Y. N., KANDEL, G. and DEVKOTA, D., 2018. Does program linking with insurance makes agriculture insurance sustainable? *Agric. Nat. Resour*., **1**(1): 6–20.

TRIVEDI, J. and SONI, B. K., 2014. A Study on cattle insurance in villages of Gandhinagar district. *Bus Perspect. Res.*, **2**(2): 25-36.

UGWUMBU, A., OKOH, N., IKE, C., NNABUIFE, C. and ORJI, C., 2010. Integrate farming systems and its effects on farm cash income in Awka south agricultural zone of Anambra state, Nigeria. *Am. Eurasian J. Agric. Environ. Sci.*, **8**(1): 01-06.

Abstract

VIII. ABSTRACT

Livestock insurance is an important risk mitigation tool especially for the resource poor farmers. Present study was conducted in Karnataka to assess the status of livestock insurance, awareness and adoption level, constraints, and suggestions for livestock insurance. An exploratory research design was adopted. Sample respondents of 100 adopters, 100 non-adopters, 200 veterinarians, 100 bankers and 50 staff of insurance agency. About 3 per cent of the total livestock of the state was covered under insurance during 2020-21through schemes. Out of 4 revenue divisions highest LI was covered in Bengaluru division. Adopters had medium to high level of awareness on procedures in availing and settling of LI. Awareness through extension participation and contacts, and positive experiences were the major factors influencing adoption of LI. Compared to native cattle (6) and buffaloes (23) crossbred cattle (231) and graded buffaloes (36) were insured in high numbers. None of the LI adopters availed LI directly from insurance company. Milk unions (49) were the major source of LI across the study area followed by Department of Animal Husbandry and banks. Experience of farmers with respect to LI was very low and renewal was high in south Karnataka whereas, it was almost negligible in north Karnataka. Education, family income, extension contact have positive corelation while, family size has negative corelation with LI adoption. Non availability of LI round the year and to all livestock, high premium rates, lengthy and complex LI procedures, and delay in claim settlement were the major constraints to the farmers. Addressing the important constraints, awareness programs on LI in campaign mode, ease in LI procedures with use of android apps were the suggestions perceived as necessary for improving the status of LI adoption.

ಸಾರಾಂಶ

ಜಾನುವಾರು ವಿಮೆಯು ವಿಶೇಷವಾಗಿ ಸಂಪನ್ಮೂಲರಹಿತ ಬಡ ಜಾನುವಾರು ಮಾಲೀಕರಿಗೆ ಅಪಾಯ ತಗ್ಗಿಸುವ ಪ್ರಮುಖ ಸಾಧನವಾಗಿದೆ. ಜಾನುವಾರು ವಿಮೆ ಕುರಿತ ವಾಸ್ತವ ಸ್ಥಿತಿ–ಗತಿ, ಜನರಲ್ಲಿನ ಅರಿವು, ಅಳವಡಿಕೆ ಮಟ್ಟ, ವಿಮೆಗೊಳಪಡಿಸುವ ಸಂದರ್ಭದಲ್ಲಿ ಎದುರಾಗುವ ಅಡಚಣೆಗಳು ಮತ್ತು ಸಲಹೆಗಳನ್ನು ನಿರ್ಣಯಿಸಲು ಈ ಪ್ರಸ್ತುತ ಅಧ್ಯಯನವನ್ನು ಕರ್ನಾಟಕದಲ್ಲಿ ನಡೆಸಲಾಗಿದೆ. ಪರಿಶೋಧನಾತ್ಮಕ ಸಂಶೋಧನಾ ವಿಧಾನವನ್ನು ಅಳವಡಿಸಿಕೊಂಡು 100 ಜಾನುವಾರು ವಿಮೆಗೊಳಪಡಿಸಿದ ರೈತರು, 100 ವಿಮೆಗೊಳಪಡಿಸದೇ ಇರುವವರು, 200 ಪಶು ವೈದ್ಯರು, 100 ಬ್ಯಾಂಕಿನ ಹಾಗು 50 ವಿಮಾ ಏಜೆನ್ಸಿಯ ಸಿಬ್ಬಂದಿ ಮತ್ತು ಅಧಿಕಾರಿಗಳ ಅಭಿಪ್ರಾಯಗಳನ್ನು ಸಂಗ್ರಹಿಸಿ ಅಧ್ಯಯನ ಮಾಡಲಾಯಿತು. 2020–21ನೇ ಸಾಲಿನಲ್ಲಿ ರಾಜ್ಯದ ಒಟ್ಟು ಜಾನುವಾರುಗಳ ಪೈಕಿ ಕೇವಲ ಪ್ರತಿಶತ 3 ಜಾನುವಾರುಗಳು ಮಾತ್ರ ವಿವಿಧ ಯೋಜನೆಗಳಲ್ಲಿ ವಿಮೆಗೆ ಒಳಪಟ್ಟಿರುತ್ತವೆ. ರಾಜ್ಯದ ನಾಲ್ಕು ಕಂದಾಯ ವಿಭಾಗಗಳ ಪೈಕಿ ಬೆಂಗಳೂರು ವಿಭಾಗದಲ್ಲಿ ಹೆಚ್ಚು ಜಾನುವಾರುಗಳು ವಿಮೆಗೊಳಪರುತ್ತವೆ. ವಿಮೆಗೊಳಪಡಿಸಿದವರ ಪೈಕಿ ವಿಮೆ ಪಡೆಯುವ ಮತ್ತು ಇತ್ಯರ್ಥಗೊಳಿಸುವ ಕಾರ್ಯವಿಧಾನಕ್ಕೆ ಸಂಭಂದಿಸಿದಂತೆ ಬಹುತೇಕ ಜನ ಮದ್ಯಮದಿಂದ ಉನ್ನತ ಮಟ್ಟದ ಅರಿವನ್ನು ಹೊಂದಿರುತ್ತಾರೆ. ವಿಸ್ತರಣಾ ಚಟುವಟಿಕೆಗಳಲ್ಲಿ ಭಾಗವಹಿಸುವಿಕೆ ಹಾಗು ವಿಸ್ತರಣಾ ಘಟಕಗಳ ಸಂಪರ್ಕಗಳ ಮೂಲಕ ಅರಿವು ಮತ್ತು ರೈತರ ಸಕಾರಾತ್ಮಕ ಅನುಭವಗಳುಜಾನುವಾರುಗಳನ್ನು ವಿಮೆಗೊಳಪಡಿಸುವಲ್ಲಿ ಪ್ರಭಾವ ಬೀರುವ ಪ್ರಮುಖ ಅಂಶಗಳಾಗಿರುತ್ತವೆ. ಅಧ್ಯಯನ ಪ್ರದೇಶದಲ್ಲಿ ಸ್ಥಳೀಯ ಹಸು (6) ಹಾಗು ಎಮ್ಮೆ (23) ಗಳಿಗಿಂತ ಮಿಶ್ರತಳಿ ಹಸು (231) ಹಾಗು ಉನ್ನತೀಕರಿಸಿದ ಎಮ್ಮೆ (36) ಹೆಚ್ಚಿನ ಸಂಖ್ಯೆಯಲ್ಲಿ ವಿಮೆಗೊಳಪಟ್ಟಿರುತ್ತವೆ. ಅಧ್ಯಯನಕ್ಕೊಳಪಡಿಸಿದ ಜಾನುವಾರು ಮಾಲಿಕರ ಪೈಕಿ ಯಾವುದೇ ಒಬ್ಬ ಮಾಲಿಕನೂ ಸ್ವಂತವಾಗಿ ವಿಮಾ ಕಛೇರಿ ಸಂಪರ್ಕಿಸಿ ರಾಸುವನ್ನು ವಿಮೆಗೆ ಒಳಪಡಿಸಿರುವುದಿಲ್ಲ. ಅತೀ ಹೆಚ್ಚು ಜನ (49) ಹಾಲು ಉತ್ಪಾದಕರ ಸಹಕಾರ ಸಂಘಗಳ ಮುಖೇನ ವಿಮೆಗೊಳಪಡಿಸಿರುತ್ತಾರೆ, ನಂತರದಲ್ಲಿ ಪಶು ಪಾಲನಾ ಮತ್ತು ಪಶು ವೈದ್ಯಸೇವಾ ಇಲಾಖೆ ಹಾಗೂ ಬ್ಯಾಂಕುಗಳ ಮುಖಾಂತರ ವಿಮೆಗೊಳಪಡಿಸಿರುತ್ತಾರೆ. ಜಾನುವಾರು ವಿಮೆಗೆ ಸಂಬಂದಿಸಿದಂತೆ ರೈತರ ಅನುಭವ ತೀರಾ ಕಡಿಮೆಯಿದ್ದು, ದಕ್ಷಿಣ ಕರ್ನಾಟಕದಲ್ಲಿ ವಿಮೆ ನವೀಕರಣ ಹೆಚ್ಚಿದ್ದು ಉತ್ತರ ಕರ್ನಾಟಕದಲ್ಲಿ ಇದು ಬಹುತೇಕ ನಗಣ್ಯವಾಗಿದೆ. ಶಿಕ್ಷಣ, ಕುಟುಂಬದ ಆದಾಯ, ವಿಸ್ತರಣಾ ಘಟಕದ ಸಂಪರ್ಕ, ಈ ಅಂಶಗಳು ವಿಮೆಗೊಳಪಡಿಸುವ ಮೇಲೆ ಧನಾತ್ಮಕ ಸಂಬಂದ ಹೊಂದಿದ್ದು, ಕುಟುಂಬ ಗಾತ್ರ ಋಣಾತ್ಮಕ ಸಂಬಂದ ಹೊಂದಿರುತ್ತವೆ. ವಿಮೆಗೊಳಪಡಿಸಲು ರೈತರಿಗಿರುವ ಪ್ರಮುಖ ಅಡಚಣೆಗಳೆಂದರೆ ವರ್ಷಪೂರ್ತಿ ಹಾಗೂ ಎಲ್ಲಾ ರಾಸುಗಳಿಗೂ ವಿಮೆ ಯೋಜನೆ ಇಲ್ಲದಿರುವುದು, ಹೆಚ್ಚಿನ ಪ್ರೀಮೀಯಂ ದರ, ವಿಮೆ ಪಡೆಯಲು ದೀರ್ಘ ಹಾಗೂ ಸಂಕೀರ್ಣ ಕಾರ್ಯ ವಿಧಾನಗಳು ಮತ್ತು ಕ್ಲೇಂ ಇತ್ಯರ್ಥದಲ್ಲಿ ವಿಳಂಬ. ಪ್ರಮುಖ ಅಡಚಣೆಗಳನ್ನು ಬಗೆಹರಿಸುವುದು, ಅರಿವಿನ ಬಗ್ಗೆ ಅಭಿಯಾನ ಹಾಗು ಜಾಗೃತಿ ಶಿಬಿರ ಹಮ್ಮಿಕೊಳ್ಳುವುದು, ವಿಮೆ ಪಡೆಯುವ ವಿಧಾನ ಸರಳೀಕರಿಸುವುದು, ಆಂಡ್ರಾಯ್ಡ್ ಅಪ್ಲಿಕೇಶನ್‌ಗಳನ್ನು ಬಳಸುವುದು ಇತ್ಯಾದಿ ವಿಮೆ ಅಳವಡಿಕೆ ಸ್ಥಿತಿ ಸುಧಾರಿಸುವ ಪ್ರಮುಖ ಸಲಹೆಗಳಾಗಿವೆ.

Appendix

IX. APPENDIX

I. Interview Schedule for Livestock Insurance Adopters

I. General Information:

1. Village:_____ Taluk: _____Dist.:_____
2. Name: _____ Father/ Husband:_____

II. Socio Economic Profile of farmers

1. Age (in completed years): _____ Yrs.
2. Sex: Male/ Female
3. Education: Illiterate/ Primary (1-4)/ Middle school (5-7)/ High s chool (8-10)/ PUC/ Graduate and above
4. Family type: Joint/ Nuclear
5. Family size: _____ No's
6. Primary occupation: AH/ Agri/ Salaried/ business/ agri labour/ any other _____
7. Secondary occupation: AH/ Agri/ Salaried/ business/ agri labour/ any other _____
8. Land holding: Rainfed: _____acres, Irrigated: _____acres, Total: _____acres
9. Experience in native livestock rearing (completed years): _____
10. Experience in crossbred livestock rearing (completed years): _____
11. Livestock possession (numbers):

Sl. No	Livestock	Adult			Young		
		Native	CB	Exotic	Native	CB	Exotic
1	Cattle						
2	Buffalo						
3	Sheep						
4	Goat						
5	Pig						
6	Poultry						
7	Others (specify)						

12. Animal procurement (numbers):

Sl. No	Livestock	Farm born	Own investment	External finance	Purchased under schemes
1	Cattle				
2	Buffalo				
3	Sheep				
4	Goat				
5	Pig				
6	Poultry				
7	Others (specify)				

13. Family Income (Lakh Rupees per Annum):

a. Income from AH: Rs_____

b. Income from Agri: Rs_____

c. Income from other sources: Rs _____

d. Total Income from all sources: Rs _____

14. Social Participation (any family member):

Sl. No.	Organizations	Member (✓)	Office bearer (✓)
1	MPCS		
2	KSWDCS		
3	SHG's		
4	FPO		
5	Farmers association		
6	Any other (specify)		

III. Awareness level and adoption of Livestock Insurance

1. Information seeking behaviour of farmers

a. Extension participation: How often the family members participate in the following activities during a year?

Sl. No.	Extension activities	Extent of participation (✓)		
		Regularly	Occasionally	Never
1	Training program/ demonstrations			
2	Interaction with the Veterinarians			
3	Group meetings including technical officers			
4	Farm visits/ exposure trips			
5	Visit to Krishi melas/ exhibitions/ farmer fairs			
6	Visit to VD/ KVK/ Milk unions/ University			
7	Reading publications (booklet, leaflets etc.)			
8	Browsing mass/ social media (YouTube, internet, apps, websites, Radio, TV etc.)			
9	Interaction with bankers and insurance agents			
10	Any other (specify)			

b. Extension contacts: How often the family members interact with the following during a year?

Sl. No.	Extension activities	Extent of interaction (✓)		
		Regularly	**Occasionally**	**Never**
1	Veterinary Officer			
2	Bank Manager/ Officers of Bank			
3	Insurance agent/ Manager			
4	KVK scientists			
5	University scientists			
6	Extension officers of Milk unions			
7	Veterinarians of Milk Unions			
8	Progressive farmers			
9	Any other (specify)			

2. Source of information about livestock insurance? (✓)

A	Formal sources	(✓)	B	Informal sources	(✓)	C	Mass media	(✓)
1	A. H. Department		1	Family members		1	Radio	
2	K.M.F (MPCS)		2	Friends		2	TV	
3	Bank		3	Local leaders		3	News	
4	Insurance Company/		4	Progressive		4	Folders	
5	NGO'S					5	Poster	
6	Others					6	Social	

3.Awareness level of livestock farmers on livestock insurance:

Sl. No	Statements	Aware/ not aware
General awareness on livestock insurance		
1	Livestock can be insured	
2	Livestock Insurance is compulsory for loanee farmers and scheme beneficiaries	
3	Under Government and KMF schemes premium subsidy is provided	
4	Premium amount must be paid for livestock insurance	
Awareness on procedures in availing livestock insurance		
1	Livestock insurance can be purchased through bank/ Veterinarian/ MPCS or from insurance company	
2	LI can be purchased for different tenures (1/2/3 years)	
3	Premium rates depend upon the valuation and tenure of insurance	
4	Insuring for long term at a time is beneficial than, insuring/ renewing every year	
5	Sum Insured amount is based upon the valuation made by the VO/ AM (AH)	
6	Health certificate issued by the authorized Veterinary doctor is a mandatory document	
7	Ear tagging is mandatory in LI	
8	The risk period starts from 15 days from payment of premium and submission of documents to the insurance office	
9	Regular payment of premium within due date is mandatory for the continuation of livestock insurance	
10	There is an option to cover the permanent total disability of the livestock and death during transit under insurance	
11	Do you know the name of the insurance company from which you have availed livestock insurance	
Awareness on claim procedure		
1	Livestock insurance should be claimed on death of animal	
2	Time of informing the insurance agents after the loss of animal	
3	PM must be conducted by the Veterinary doctor and issue PM report	
4	Claim of Livestock insurance can be made on PTD	
5	Treatment certificate and prognosis must be given by the Veterinary doctor in PTD	
6	Claim can be rejected during the situations like preventable risks (diseases)	
7	Do you know tag is must at the time of settlement (NO TAG NO CLAIM)	

4.Adoption of livestock insurance:

a. Factors influencing the adoption of livestock insurance

Sl. No	Items	Rank
	Adoption	
1	Motivation by friends and community	
2	Awareness and knowledge acquired by training and motivation by extension contacts	
3	Positive experiences regarding LI – personal and community	
4	Livestock provides economic stability to the farmers livelihood – cannot afford loss of animals	
5	Animal's high purchase cost – claim amount can help in the purchase of replacement stock	
6	Animal's high production capacity – in case of loss at least claim amount can be a compensation	
7	Breed of the animal – Exotic/ far away home tract- sensitive animals	
8	Disease prone locale	
9	Compulsion for availing loan for livestock project	
10	Compulsion for being selected as beneficiary in livestock scheme/ subsidy	
11	Presence of insurance agents/bankers at rural and block level/ in the vicinity	
12	Poor animal health services in the locale	
13	Premium amount is affordable in the govt or KMF insurance schemes	

b. Livestock Insured at present (Numbers):

Sl. No	Livestock	Native	CB	Exotic
1	Cattle			
2	Buffalo			
3	Sheep			
4	Goat			
5	Pig			
6	Poultry			
7	Others (specify)			

c. Reasons for insuring the livestock (✓): Risk transfer/ Mandatory for scheme or loan / both/ others

d. Sources of livestock Insurance availed:

a. Dept of AH & VS

b. MPCS (Milk Union)

c. Bank

d. Insurance company itself

e. None …...done with own efforts

e. Experience in LI: Since how many years you are taking LI: ____ Years (Bank mediated) ____Years (AHVS/ MUL mediated)

f. Renewal of LI: Have you ever renewed the livestock insurance policy _____ Y/N

g. Level of satisfaction among the livestock farmers about LI:

Sl. No	Particulars	Highly satisfied	Satisfied	Not satisfied
1	Livestock insurance premium rate			
2	Ease of purchasing LI and its renewal			
3	Terms and conditions of insurance policy			
4	Guidance and support by scheme officers/ bankers/ insurance agents at all stages			
5	Timely visits done by the implementing officers at all the stages of insuring and claiming			
6	Claim procedure – Ease and Quickness			
7	Coverage of risks of livestock insurance policies			

IV. Constraints of farmers in livestock insurance:

Sl. No	Constraints	Rank
	General constraints	
1	Livestock insurance is not compulsory	
2	No faith in the Livestock insurance	
3	Native breeds don't need insurance – less productive, less risks in rearing, sturdy breeds	
4	Only scheme beneficiaries/ loanee farmers are provided with LI for the animals purchased under loan/ scheme – General farmer cannot purchase LI	
5	Only limited number of animals per family can be insured under schemes	
6	Schemes not available round the year and for everyone in the society	
7	We (meat animal rearer) rear livestock for a short duration (<1 year) – no short duration insurance policies	
8	Apathy of Veterinarians/ Bankers/ Insurance agents towards livestock insurance	
9	Extra fee demand by Veterinarians/ Bankers/ Insurance agents at different stages of insurance purchase and claim settlement - they harass and delay the procedures	
10	Insurance is not available for animal health expenses	
11	Insurance company not accepting coverage for PTD	
12	Difficulty in transfer of policy on sale of animals	
	In buying the Livestock insurance policy	
1	High premium rates – not affordable	
2	Inadequate publicity of scheme mechanism - Lack of awareness about livestock insurance procedures and schemes among the farmers	
3	Lengthy and complex insurance procedure	
4	Large herd size, difficult to pay premium and maintain documents	
5	Insurance is available for the select type of animals (Cow/ buffalo etc… not bullocks)	
6	Distant location of Bank/veterinary hospital/insurance company – difficult in accessing the insurance services	
7	Lack of delivery mechanism at farmer doorsteps	
8	Animal identification is not fool proof – can be tampered or lost	
9	Ear tagging complications: wound/ loss of ear tags/ loss of numbers	
10	Insured animals will be tagged – I don't prefer my animals to be tagged/ injured/ Religious beliefs	

11	Death of animal before retagging	
12	Policy document is not delivered to the farmer – it doesn't reach the party	
13	Not easy to buy PTD and extra premium must be paid for PTD	
In claim settlement		
1	Unsatisfied with length of indemnity period – we need ultra-short/ lengthy periods	
2	Claim amount of the livestock is not based on present market value/ production performance – it is based on the insured amount only	
3	Lack of awareness about the claim procedure	
4	Lengthy and complex claim procedure	
5	Death of animal within 15 days of insurance	
6	Delay in visit of insurance agent/ Vet/ Banker – difficult to keep the carcass for long duration	
7	Difficulty in contacting and intimating the Bankers, Veterinary doctors, and insurance agents on holidays/ busy days/ due to remote location	
8	Loss of tags	
9	Changes in skin colour, horn length of animal (long duration insurance)– identification marks	
10	Delay in claim settlement	
11	Claim payment less than insured amount – without any reasons	
12	Difficulty to settle a claim under PTD	
13	High expenses involved in arranging people/ vehicles for PM and disposal of carcass	
14	Not satisfied with the service	

V. <u>Farmers wants in livestock insurance</u>

Sl. No	Wants	(✓)
1	Decrease the premium rates/ free insurance	
2	Cover all animals in the herd/ owned by the farmers	
3	Insurance should be available for all categories of livestock farmers	
4	Alternate identification methods other than tagging	
5	Provide health insurance	
6	Avoid PM for all natural deaths and death due to diseases	
7	Replace PM report with death certificates	
8	Ease the process of insurance and claim – mobile based methods	
9	Reduce the time involved in purchase of policy and claim settlement	
10	Prompt cover for PTD	
11	Offer customized indemnity to interested farmers	
12	Policy transfer (on sale of animal) should be made easy	

II. Interview Schedule for Livestock Insurance Non-Adopters

I. General Information:

1.Village: _____ Taluk: _____ Dist.: _____

2.Name: _____ Father/ Husband: _____

II. Socio Economic Profile of farme

1.Age (in completed years): _____ Yrs.

2.Sex: Male/ Female

3.Education: Illiterate/ Primary (1-4)/ Middle school (5-7)/ High school (8-10)/ PUC/ Graduate and above

4.Family type: Joint/ Nuclear

5.Family size: _____ No's

6.Primary occupation: AH/ Agri/ Salaried/ business/ Agri labour/ any other _____

7.Secondary occupation: AH/ Agri/ Salaried/ business/ Agri labour/ any other _____

8.Land holding: Rainfed: _____acres, Irrigated: _____acres, Total: _____acres

9.Experience in native livestock rearing (completed years): _____

10.Experience in crossbred livestock rearing (completed years): _____

11.Livestock possession (numbers):

Sl. No	Livestock	Adult			Young		
		Native	CB	Exotic	Native	CB	Exotic
1	Cattle						
2	Buffalo						
3	Sheep						
4	Goat						
5	Pig						
6	Poultry						
7	Others (specify)						

12.Animal procurement (numbers):

Sl. No	Livestock	Farm born	Own investment	External finance	Purchased under schemes
1	Cattle				
2	Buffalo				
3	Sheep				
4	Goat				
5	Pig				
6	Poultry				
7	Others (specify)				

13.Family Income (Lakh Rupees per Annum):

e. Income from AH: Rs_____

f. Income from Agri: Rs_____

g. Income from other sources: Rs _____

h. Total Income from all sources: Rs _____

14.Social Participation (any family member):

Sl. No.	**Organizations**	**Member (✓)**	**Office bearer (✓)**
1	MPCS		
2	KSWDCS		
3	SHG's		
4	FPO		
5	Farmers association		
6	Any other (specify)		

III. Awareness level of Livestock Insurance in non-adopters.

1. Information seeking behaviour of farmers

a. Extension participation: How often the family members participate in the following activities during a year?

Sl. No.	Extension activities	Extent of participation (✓)		
		Regularly	**Occasionally**	**Never**
1	Training program/ demonstrations			
2	Interaction with the Veterinarians			
3	Group meetings including technical officers			
4	Farm visits/ exposure trips			
5	Visit to Krishi melas/ exhibitions/ farmer fairs			
6	Visit to VD/ KVK/ Milk unions/ University			
7	Reading publications (booklet, leaflets etc.)			
8	Browsing mass/ social media (YouTube, internet, apps, websites, Radio, TV etc.)			
9	Interaction with bankers and insurance agents			
10	Any other (specify)			

b. Extension contacts: How often the family members interact with the following during a year?

Sl. No.	Extension activities	Extent of interaction (✓)		
		Regularly	**Occasionally**	**Never**
1	Veterinary Officer			
2	Bank Manager/ Officers of Bank			
3	Insurance agent/ Manager			
4	KVK scientists			
5	University scientists			
6	Extension officers of Milk unions			
7	Veterinarians of Milk Unions			
8	Progressive farmers			
9	Any other (specify)			

2.Awareness level of livestock farmers on livestock insurance:

Sl. No	Statements	Aware/ not aware
General awareness on livestock insurance		
1	Livestock can be insured	
2	Livestock Insurance is compulsory for loanee farmers and scheme beneficiaries	
3	Under Government and KMF schemes premium subsidy is provided	
4	Premium amount must be paid for livestock insurance	
Awareness on procedures in availing livestock insurance		
1	Livestock insurance can be purchased through bank/ Veterinarian/ MPCS or from insurance company	
2	LI can be purchased for different tenures (1/2/3 years)	
3	Premium rates depend upon the valuation and tenure of insurance	
4	Insuring for long term at a time is beneficial than, insuring/ renewing every year	
5	Sum Insured amount is based upon the valuation made by the VO/ AM (AH)	

6	Health certificate issued by the authorized Veterinary doctor is a mandatory document	
7	Ear tagging is mandatory in LI	
8	The risk period starts from 15 days from payment of premium and submission of documents to the insurance office	
9	Regular payment of premium within due date is mandatory for the continuation of livestock insurance	
10	There is an option to cover the permanent total disability of the livestock and death during transit under insurance	
11	Do you know the name of the insurance company from which you have availed livestock insurance	
Awareness on claim procedure		
1	Livestock insurance should be claimed on death of animal	
2	Time of informing the insurance agents after the loss of animal	
3	PM must be conducted by the Veterinary doctor and issue PM	
4	Claim of Livestock insurance can be made on PTD	
5	Treatment certificate and prognosis must be given by the Veterinary doctor in PTD	
6	Claim can be rejected during the situations like preventable risks (diseases)	
7	Do you know tag is must at the time of settlement (NO TAG NO CLAIM)	

IV. Constraints of farmers in livestock insurance:

Sl. No	Constraints	Rank
General constraints		
1	Livestock insurance is not compulsory	
2	No faith in the Livestock insurance	
3	Native breeds don't need insurance – less productive, less risks in rearing, sturdy breeds	
4	Only scheme beneficiaries/ loanee farmers are provided with LI for the animals purchased under loan/ scheme – General farmer cannot purchase LI	
5	Only limited number of animals per family can be insured under schemes	

6	Schemes not available round the year and for everyone in the society	
7	We (meat animal rearer) rear livestock for a short duration (<1 year) – no short duration insurance policies	
8	Apathy of Veterinarians/ Bankers/ Insurance agents towards livestock insurance	
9	Extra fee demand by Veterinarians/ Bankers/ Insurance agents at different stages of insurance purchase and claim settlement - they harass and delay the procedures	
10	Insurance is not available for animal health expenses	
11	Insurance company not accepting coverage for PTD	
12	Difficulty in transfer of policy on sale of animals	
In buying the Livestock insurance policy		
1	High premium rates – not affordable	
2	Inadequate publicity of scheme mechanism - Lack of awareness about livestock insurance procedures and schemes among the farmers	
3	Lengthy and complex insurance procedure	
4	Large herd size, difficult to pay premium and maintain documents	
5	Insurance is available for the select type of animals (Cow/ buffalo etc… not bullocks)	
6	Distant location of Bank/veterinary hospital/insurance company – difficult in accessing the insurance services	
7	Lack of delivery mechanism at farmer doorsteps	
8	Animal identification is not fool proof – can be tampered or lost	
9	Ear tagging complications: wound/ loss of ear tags/ loss of numbers	

10	Insured animals will be tagged – I don't prefer my animals to be tagged/ injured/ Religious beliefs	
11	Death of animal before retagging	
12	Policy document is not delivered to the farmer – it doesn't reach the party	
13	Not easy to buy PTD and extra premium must be paid for PTD	
In claim settlement		
1	Unsatisfied with length of indemnity period – we need ultra-short/ lengthy periods	
2	Claim amount of the livestock is not based on present market value/ production performance – it is based on the insured amount only	
3	Lack of awareness about the claim procedure	
4	Lengthy and complex claim procedure	
5	Death of animal within 15 days of insurance	
6	Delay in visit of insurance agent/ Vet/ Banker – difficult to keep the carcass for long duration	
7	Difficulty in contacting and intimating the Bankers, Veterinary doctors, and insurance agents on holidays/ busy days/ due to remote location	
8	Loss of tags	
9	Changes in skin colour, horn length of animal (long duration insurance)– identification marks	
10	Delay in claim settlement	
11	Claim payment less than insured amount – without any reasons	
12	Difficulty to settle a claim under PTD	
13	High expenses involved in arranging people/ vehicles for PM and disposal of carcass	
14	Not satisfied with the service	

V. Farmers wants in livestock insurance

Sl. No	Wants	(✓)
1	Decrease the premium rates/ free insurance	
2	Cover all animals in the herd/ owned by the farmers	
3	Insurance should be available for all categories of livestock farmers	
4	Alternate identification methods other than tagging	
5	Provide health insurance	
6	Avoid PM for all natural deaths and death due to diseases	
7	Replace PM report with death certificates	
8	Ease the process of insurance and claim – mobile based methods	
9	Reduce the time involved in purchase of policy and claim settlement	
10	Prompt cover for PTD	
11	Offer customized indemnity to interested farmers	
12	Policy transfer (on sale of animal) should be made easy	

III. Interview schedule for Veterinarian's perceptions regarding Livestock Insurance

I	**General information**			
1	Name			
2	Designation			
3	Working in (✓)	a. Dept of AH&VS, GOK	b. Milk Union	c. Sheep and wool development board/ corporation.
4	Institution Address			
II	**Constraints faced by veterinarians in Livestock Insurance**			
a.	**Constraints faced by veterinarians in implementing Livestock Insurance (✓)**			
	Constraints with respect to LI	Very important constraint	Less important constraint	Not a constraint
1	High premium rates			
2	Farmers not interested to insure their livestock without subsidy in the premium			
3	Farmers not interested in Livestock Insurance			
4	Farmer's lack of awareness about livestock insurance procedures and schemes			
5	Farmer ask for insurance when his animal falls sick			
6	Farmers refuse to tag their animal - Religious beliefs – no wound should be incited, even the tag wound			
7	Ear tagging complications: wound/ loss of ear tags/ loss of numbers/ injury to the personnel			
8	Delay in reporting the loss of tag in animals by the Farmers – Retagging is a menace			
9	Difficult to identify the interested farmer with listed criteria in guidelines and ready to pay premium			
10	Minimum targets for Livestock Insurance under subsidy schemes			
11	Insurance subsidy amount not available round the year			
12	Non availability of insurance agents at taluka level			
13	Insurance company not ready to take insurance proposals other than scheme beneficiaries and loanee farmers			
14	Any other constraints experienced			

b.	**Constraints faced by veterinarians in settlement of Livestock Insurance (✓)**			
	Constraints with respect to settlement of Livestock Insurance	Very important constraint	Less important constraint	Not a constraint
1	Farmers generally ignore the health and treatment of the insured livestock – especially the meat animals			
2	Death of animal before retagging – delayed reporting of loss of tag by the farmer			
3	Delayed intimation of the animal death – PM findings will not be correct			
4	Difficult to attend PM in time due to other official engagements and large area of coverage.			
6	No proper lab support to access the cause of death – insurance company does not share the responsibility			
7	Difficult to judge the production performance of animal before falling ill and death by seeing carcass			
8	Political pressures on the observations in PM reports			
9	Delay in receiving of tag, post-mortem photos, policy documents from farmer			
10	Delay in claim settlement from insurance office			
11	Repeated enquiry by the farmers until claim settlement			
12	Not easy to settle a claim under PTD			
13	Claim payment less than insured amount – without any reasons			
14	On rejection of the claim the Veterinarian is projected as the culprit by all			
III	**Suggestions to improve service and coverage of Livestock Insurance (✓)**			
	Suggestions to bring improvements in Livestock Insurance	Strongly agree	Agree	Disagree
1	LI should be open to all farmers and should be made compulsories for all animals held			
2	Insurance premium should be reduced to cover a larger mass			
3	Instead of compensation schemes Government should fund insurance scheme to cover all the sections of the society and for all the domestic species			

4	Advanced and fool proof identification methods should be adopted – tagging should be replaced by RFID or muzzle imprints			
5	Android app-based procedures for insuring livestock: a. Uploading animal photos/ Uploading proposal form/ claim form by farmer / Uploading health/retagging/ PM certificate/ death intimation letter by veterinarian and Uploading bank passbook			
6	Using following methods for Claim settlement: a. Video calling at the time of animal's death confirming animal, ear tag number and the owner b. RTGS of indemnity amount to the farmer's account.			
7	Insurance provision for animal health expenses (surgery and costly treatment) should be started – as in humans			
8	Strict penalties should be imposed for those involved in malpractices related to LI			
9	Insurance agency, Bank and Veterinary Institutions should be made responsible not only for the issuance but also for the documentation of the policy/ claim, purchase/ renewal, and health/ PM certificate respectively			
10	All the information of the LI viz., renewal date, premium amount, policy documents should be made available to the farmer through Android app]			
11	The time frame for settling the claim by company should be reduced			
12	Education and awareness programs on livestock insurance should be undertaken on large scale			
13	Regular payment of health and PM certificate fees to the Veterinarian by the concerned			
14	Improvement in animal healthcare and diagnostic infrastructure and services by AH&VS, Milk unions and Veterinary Universities			
15	Any other suggestions to improve Livestock insurance			

IV. Interview schedule for the Opinion of bankers regarding Livestock Insurance.

I	**General information**			
1	Name			
2	Designation			
II	**Constraints in Livestock Insurance-Banker's opinion (✓)**			
	Constraints with respect to Livestock Insurance	Very important	Less important	Not a constraint
1	Lack of awareness in farmers about the importance of livestock insurance			
2	Lack of fool proof animal identification system			
3	Difficulty to maintain insurance records of each animal at Bank			
4	Carelessness and poor management of the insured livestock by the farmers			
5	Constraints with respect to Livestock Insurance [Delayed intimation of death of the animal			
6	Delayed submission of filled claim form, tag, post-mortem photos, veterinary post-mortem certificate and documents by farmer/veterinarian to bank			
7	Delayed dispatch of documents (received from Vet/ farmer) to the insurance company from bank			
8	Delay in claim settlement by insurance company			
9	Claim payment less than insured amount			
10	Any other constraints you have experienced			

III	**Suggestions to improve the services and coverage of Livestock Insurance (✓)**			
	Suggestions to bring improvements in Livestock Insurance	Strongly agree	Agree	Disagree
1	LI should be open to all farmers (not just scheme beneficiaries/ loanee farmers) – and should be made compulsories for all animals held			
2	Insurance premium should be reduced to cover a larger mass			
3	Instead of compensation schemes Government should fund insurance scheme to cover all the sections of the society and for all the domestic species			
4	Advanced and fool proof identification methods should be adopted – tagging should be replaced by RFID or muzzle imprints			
5	Android app-based procedures for insuring livestock: Uploading animal photos/ Uploading proposal form/ claim form by farmer / Uploading health/retagging/ PM certificate/ death intimation letter by veterinarian and Uploading bank passbook			
6	Using following methods for Claim settlement: a. Video calling at the time of animal's death confirming animal, ear tag number and the owner b. RTGS of indemnity amount to the farmer's account.			
7	Strict penalties should be imposed for those involved in malpractices related to LI			
8	Insurance agency, Bank and Veterinary Institutions should be made responsible not only for the issuance but also for the documentation of the policy/ claim, purchase/ renewal, and health/ PM certificate respectively			
9	All the information of the LI viz., renewal date, premium amount, policy documents (proposal form, policy, claim form, health certificate, retag certificate, PM certificate etc.) should be made available to the farmer through Android app			
10	Faster settling of the claim by insurance company			
11	Education and awareness programs on livestock insurance should be undertaken on large scale			
12	Improve animal healthcare and diagnostic infrastructure and services			
13	Any other suggestions to bring improvements in livestock insurance			

V. Interview schedule for Insurance Agency on Livestock Insurance.

I	**General information**			
1	Name (Optional)			
2	Designation			
3	Insurance Company			
II	**Constraints in implementation of Livestock Insurance (✓)**			
	Constraints	Very important constraint	Less important constraint	Not a constraint
1	Lack of awareness in farmers about the livestock insurance procedures			
2	High operating cost			
3	Remoteness of area to be served			
4	Difficulties in animal identification (tagging)			
5	Shortage of insurance agents to attend the cases of livestock insurance			
6	Only animals under scheme or loan purchases are covered under insurance			
7	Carelessness and poor management of the insured livestock			
8	Premium subsidization has adverse effect on general insurance			
9	Laborious			
III	**Constraints in settlement of Livestock Insurance (✓)**			
	Constraints	Very important constraint	Less important constraint	Not a constraint
1	Delay in intimation of the animal death			
2	Difficult to visit deceased animal on time due to other official engagements, remote location, and large area of coverage.			
3	Shortage of insurance agents to attend the cases of insurance			
4	Untimely submission of documents			
5	Fraud claims			
6	High claim ratio			
7	Laborious claim settlement procedures			
8	Any other constraints experienced			

IV	Suggestions to improve service and coverage of livestock insurance (✓)			
	Suggestions	Strongly agree	Agree	Disagree
1	LI should be open to all farmers (not just scheme beneficiaries/ loanee farmers) – and should be made compulsories for all animals held			
2	Insurance premium should be reduced to cover a larger mass			
3	Instead of compensation schemes Government should fund insurance scheme to cover all the sections of the society and for all the domestic species			
4	Advanced and fool proof identification methods should be adopted – tagging should be replaced by RFID or muzzle imprints			
5	Android app-based procedures for Livestock insurance			
6	Using following methods for Claim settlement: a. Video calling at the time of animal's death confirming animal, ear tag number and the owner b. RTGS of indemnity amount to the farmer's account.			
7	Strict penalties should be imposed for those involved in malpractices related to LI			
8	All the information of the LI viz., renewal date, premium amount, policy documents may be made available to the farmer through Android app			
9	Try to reduce the time frame for settling the claim			
10	Education and awareness programs on livestock insurance should be undertaken on large scale			
11	Improvement in animal healthcare and diagnostic infrastructure and services by AH & VS, Milk unions and Veterinary Universities			
12	Any other suggestions			