

ANNUAL TECHNICAL REPORT

FISCAL YEAR 2081/082 (2024/25)

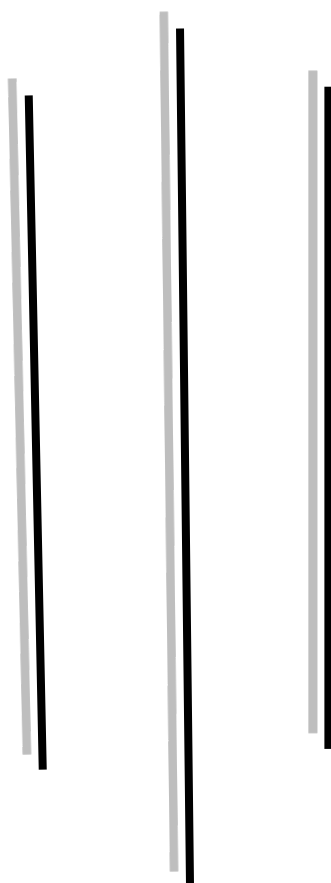


Government of Nepal
Ministry of Agriculture, Forest and Environment
Department of Livestock Services
Central Veterinary Laboratory

Tripureshwor, Kathmandu

Annual Technical Report

Fiscal year 2081/82 (2024/25)



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Foreword

It is my pleasure to present to you the Annual Bulletin of the Central Veterinary Laboratory (CVL) for the fiscal year 2081/82 (2024/25). This technical bulletin highlights our activities, accomplishments, and overall progress in disease diagnosis and providing information on status of different animal disease control program thus contributing for the improvement of animal health in the country.

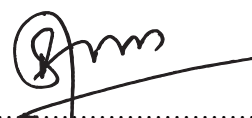
The Central Veterinary Laboratory (CVL) serves as referral veterinary diagnostic center in the country. It plays a vital role in diagnosing animal diseases, investigating outbreaks, and ensuring the safety of animals and animal products. CVL employs advanced diagnostic methods, including conventional and real time-based Polymerase Chain Reaction (PCR), Enzyme-Linked Immunosorbent Assay (ELISA), and Fluorescent Antibody Tests (FAT) to facilitate routine diagnosis of major economic and zoonotic diseases such as Avian Influenza (AI), Newcastle Disease (ND), Infectious Bursal Disease (IBD), African Swine Fever (ASF), Lumpy Skin Disease (LSD), and Peste des Petits Ruminants (PPR) etc.

The bacteriology unit at CVL conducts regular testing of clinical samples and also function as the national referral site for Antimicrobial Resistance (AMR) surveillance program, collaborating with other veterinary laboratories and the National Avian Disease Diagnosis Laboratory in Chitwan.

The public health section of CVL monitors conduct surveillance of priority Zoonotic diseases and support with local and provincial government institutes to improve slaughtering and sale of meat and meat products. The unit also conducts antibiotic residue test in meat and milk using ELISA to ensure food safety.

We are focused on upgrading the Central Veterinary Laboratory (CVL), veterinary laboratories and the National Avian Disease Diagnosis Laboratory (NADIL) to provide reliable, prompt and standardized diagnostic services nationwide. CVL maintains strong coordination and conducts regular training program with veterinary laboratories, provincial veterinary offices, and local units to ensure quality sample flow for advanced diagnosis, reinforcing CVL's role as the National Reference Laboratory for animal health.

I sincerely thank the Food and Agriculture Organization (FAO), the Australian Centre for Disease Preparedness (ACDP), and the International Atomic Energy Agency (IAEA) for collaboration and continuous support to upgrade and strengthen the quality of diagnostic services of the CVL. I am also grateful to FHI 360 (Fleming Fund) for their contribution on AMR surveillance capacity building. Finally, I appreciate the hard work of all the staffs working in laboratory system for their tireless efforts in performing the test and coming with results. Special thanks to veterinary officers at CVL for bringing the final report in this format. We anticipate feedback from the readers which will help us to improve our work.



.....
Dr. Barun Kumar Sharma
Chief Veterinary Officer
Central Veterinary Laboratory

Abbreviations

AI	Avian Influenza
ALC	Avian Leucosis Complex
AMR	Anti-Microbial Resistance
ASF	African Swine Fever
AST	Antibiotic Sensitivity Test
BSE	Bovine Spongiform Encephalopathy
BVD	Bovine Viral Diarrhoea
CFT	Complement Fixation Test
CRVH	Central Referral Veterinary Hospital
CMT	California Mastitis Test
CS	Cloacal swab
CSF	Classical Swine Fever
CVL	Central Veterinary Laboratory
DLS	Department of Livestock Services
ELISA	Enzyme Linked Immunosorbent Assay
EPG	Egg per Gram
EQA	External Quality Assurance
ES	Environmental swab
ESBL	Extended Spectrum Beta Lactamase
FAO	Food and Agriculture Organization.
FAT	Fluorescent Antibody Test
FMD	Foot and Mouth Disease
GLP	Good Laboratory Practice
HA	Haemagglutination
HI	Haemagglutination Inhibition
HPAI	Highly Pathogenic Avian Influenza
IAEA	International Atomic Energy Agency
IB	Infectious Bronchitis
ILT	Infectious Laryngotracheitis
IBD	Infectious Bursal Disease
LFA	Lateral Flow Assay
LSD	Lumpy Skin Disease
MoALD	Ministry of Agriculture and Livestock Development
NADIL	National Avian Disease Investigation Laboratory
NEQA	National External Quality Assurance

ND	New Castle Disease
NPHL	National Public Health Laboratory
NS	Nasal swab
PAT	Plate Agglutination Test
PPR	Peste des petits Ruminants
PM	Post Mortem
PT	Proficiency Testing
rRT PCR	Real Time Reverse Transcriptase Polymerase Chain Reaction
RBPT	Rose Bengal Plate Test
RDT	Rapid Diagnostic Test
SOP	Standard Operating Procedure
SPS	Sanitary and Phyto Sanitary Standard
TS	Tracheal swab
UTI	Urinary Tract Infection
VHLSEC	Veterinary Hospital and Livestock Service Expert Center
VLs	Veterinary Laboratories
WOAH	World Organization for Animal Health
WTO	World Trade Organization

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Chapter I: Introduction

1. Background

Central Veterinary Laboratory (CVL), referral laboratory in animal health sector in Nepal, focuses program with the objective of securing healthy national herd of livestock throughout the nation by mitigating the occurrence of diseases of livestock and poultry. CVL and the laboratory functioning under it works on epidemic investigation as well as surveillance and investigation on various diseases. The direct benefit of the performance of various laboratories has been experienced in the field of veterinary medical care based on valid laboratory test results. To achieve these multidimensional activities, CVL works with a series of laboratory test procedures through its various laboratory sections; Pathology, Parasitology, Microbiology, Serology, Laboratory management and teaching laboratory and Molecular Biology with a considerable progress in the later.

CVL has Standard Operating Procedures (SOPs), test protocols and quality guideline manual. CVL is gradually practicing the biosafety/ biosecurity measures so that Good Laboratory Practice is followed in all diagnostic laboratories. CVL is working to build knowledge and skills of biosafety and biosecurity to lab staff of all laboratories in animal health sector. CVL has already been participating in proficiency testing program with WOAHA reference laboratories and has been adopting test verification system through international reference laboratories which will support to achieve different test for accreditation for international certification in future.

To provide diagnostic facilities throughout the country, CVL works through its five Veterinary Laboratories (VLs) located in different provinces of the nation; Veterinary Laboratory Biratnagar, Veterinary Laboratory Janakpur, Veterinary Laboratory Pokhara, Veterinary Laboratory Surkhet and Veterinary Laboratory Dhangadhi. Diagnostic services are provided throughout the country in collaboration with provincial veterinary hospital, local veterinary unit. Specimens that cannot be processed in the aforementioned laboratories or needed to be further tested for confirmation are referred to the CVL. Provincial, veterinary hospital and veterinary units of local level also send samples to the CVL in coordination with Veterinary Diagnostic Laboratories for confirmatory diagnosis.

CVL has been actively involved in developing laboratory capacity of provincial laboratory capacity of provincial and local level veterinary units. In this CVL is supporting with laboratory placement of newly recruited staff and also bridging through on site mentoring to build capacity at local level. This has also contributed to build functional network among different tiers which has supported in sample collection and dispatch.

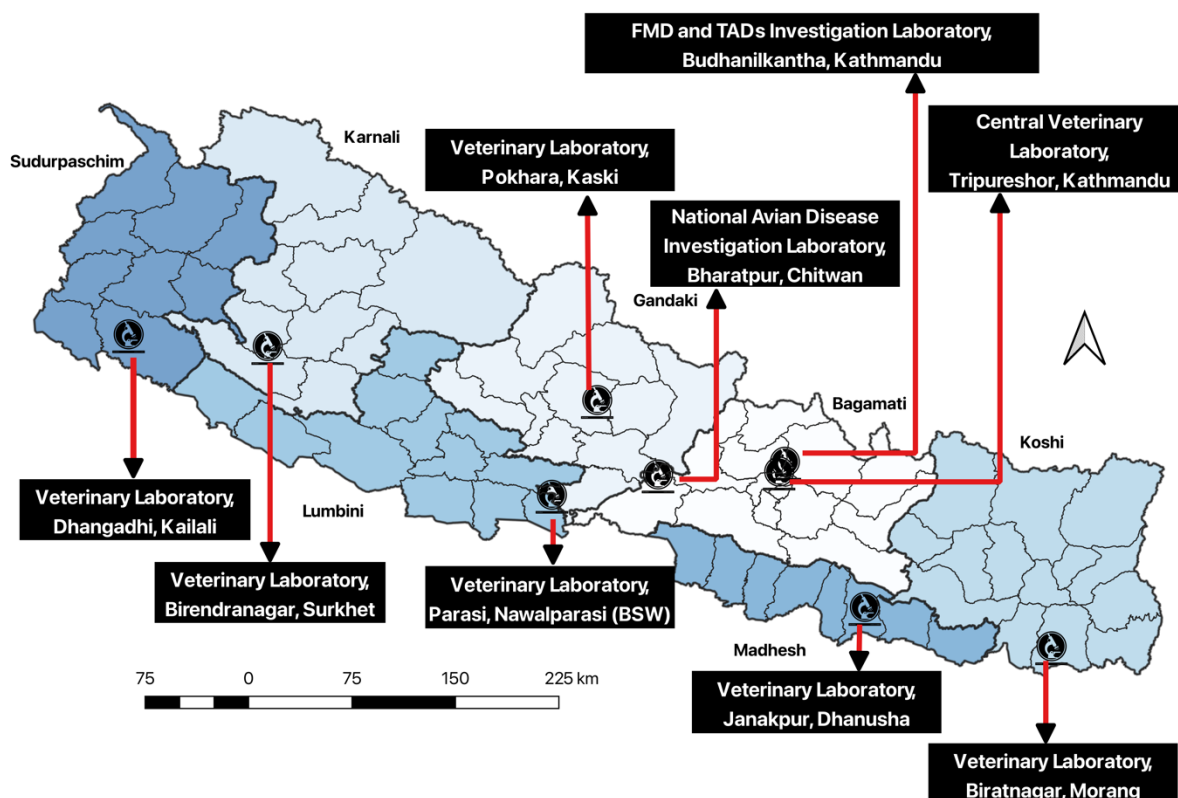


Figure 1: Map showing veterinary laboratories in Nepal.

2. Objectives

The role of the veterinary laboratory system has become dynamic with the advent of public health, food safety issues, economic liberalization and trade globalization. Nepal joined World Trade Organization (WTO) as a member in 2004. Therefore, Nepal follows the guidelines provided by the World Organization for Animal Health (WOAH) for the provision of Sanitary and Phytosanitary (SPS) agreement under WTO that seeks scientific procedures and evidence in the course of disease diagnosis as well as production chain. The roles of veterinary diagnostic laboratories are now therefore expanded and challenging in the new context. Moreover, CVL works with the following objectives in the country.

- Provide laboratory diagnostic services for animal health and veterinary public health.
- Conduct disease surveillance and monitoring programs.
- Ensure the quality and reliability of diagnostic tests and laboratory procedures by adhering to national and international standards and guidelines.
- Conduct epidemiological investigations to understand disease patterns, causes, and effects, and to control their spread and impact.
- Collaborate with national and international reference laboratories and institutions on laboratory diagnosis.
- Acquire, adopt, upgrade, and share diagnostic methods for livestock and poultry diseases to the laboratories working under CVL.
- Recommend animal health policies and disease control programs to the Department of Livestock Services (DLS) for effective disease control.
- Provide training in laboratory diagnostics for veterinarians and veterinary paraprofessionals.
- Provide technical support to strengthen veterinary laboratories at the three-tier government.

- To achieve the aforementioned objectives, there is a series of approved annual activities carried out by different laboratory sections of the CVL and five VLs.

3. Organization Structure:

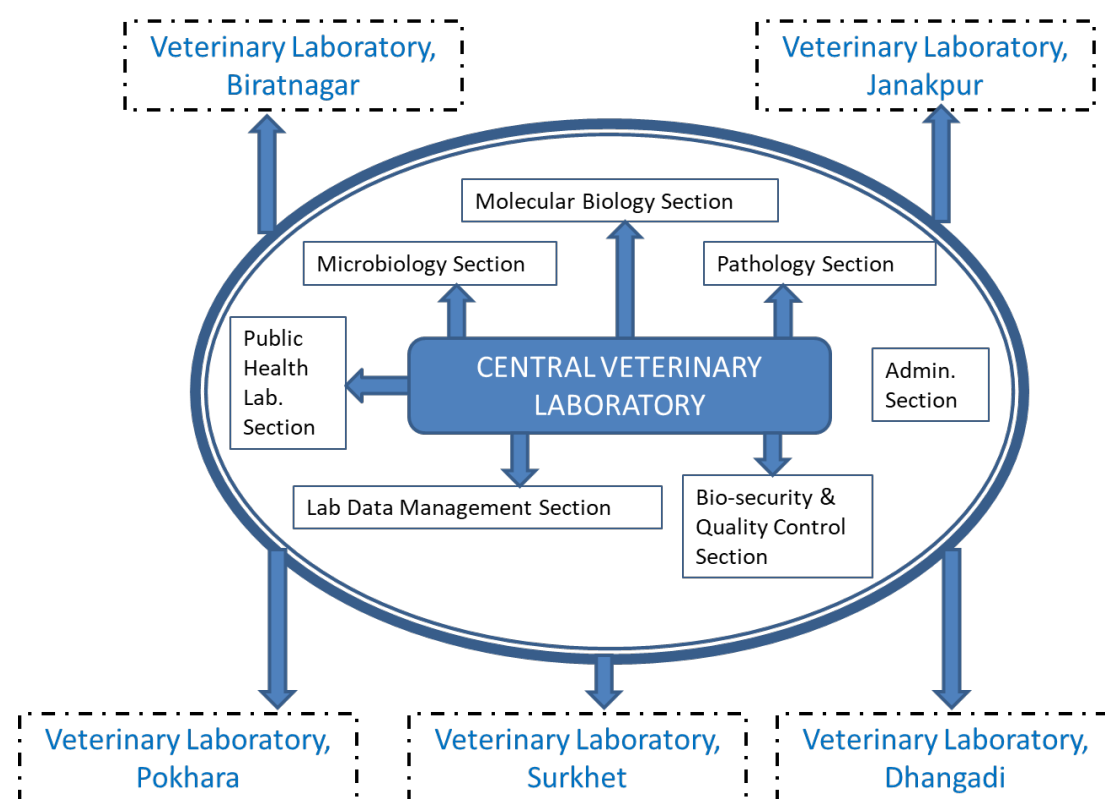


Figure 2: Organizational structure of CVL

4. Human resources

There are total of 39 permanent positions and 2 contract position in CVL, which is led by the Chief Veterinary Officer. Under the Chief Veterinary Officer, there are four Senior Veterinary Officers, twelve Veterinary Officers, eight Animal Health Technicians and four Junior Animal Health Technicians. In the administration part, there is one accountant, one non-gazetted first class, two drivers and six office assistants. One computer operator and one driver is in contract. The details of staff at CVL are given in Table 1.

Table 1: List of Staffs working at CVL (F/Y 2081/82)

S.N.	Name	Position	Total Number	Fulfilled
1	Dr. Barun Kumar Sharma	Chief Veterinary Officer	1	1
2	Dr. Pragya Koirala	Senior Veterinary Officer	4	4
3	Dr. Sita Rijal			
4	Dr. Ram Chandra Sapkota			
5	Dr. Arjun Aryal			
6	Mr. Bal Bahadur Kunwar	Veterinary Officer	12	12
7	Mr. Prakash Devkota			
8	Mr. Dhan Raj Rai			
9	Dr. Manju Maharjan			
10	Dr. Luna Gongal			
11	Dr. Sikesh Manandhar			
12	Dr. Bikesh Kumar Raut			
13	Dr. Bikash Giri			

S.N.	Name	Position	Total Number	Fulfilled
14	Dr. Binita Tamang			
15	Dr. L B Sahi			
16	Dr. Rubina Shah			
17	Dr. Anil Regmi			
18	Ms. Sushma Pokherel	Nayab Subba	1	1
19	Mr. Shiva Raj Khadka	Accountant	1	1
20	Mr. Hari Lal Kandel	Animal Health Technician	8	8
21	Ms. Rita Dahal			
22	Mr. Prabhu Nath Dhakal			
23	Mr. Sudip Kafle			
24	Mr. Dharma Raj Jaishi			
25	Ms. Sunita Adhikari			
26	Ms. Mina Kumari Tamang			
27	Ms. Bimala K.C			
28	Dr. Udaya Lal Khatri	Asst. Animal Health Technician	4	4
29	Mr. Rikesh Yadav			
30	Mr. Deepak Ghimire			
31	Ms. Anita Shrestha			
32	Mr. Jeevan Rai	Computer Operator (Contract)	1	1
33	Mr. Krishna Khadaka	Driver	3 (2 contract)	3
34	Mr. Dipesh Rana Magar			
35	Mr. Kumar Nagarkoti			
36	Ms. Devaki Rimal	Office Assistant	6	6
37	Ms. Yam Kumari Rai			
38	Ms. Bhima Acharya			
39	Mr. Chandra Bahadur Rana Magar			
40	Ms. Laxmi Adhikari			
41	Mr. Kesav Pokharel			
Total			41	41

Chapter II: Annual Progress

5. Annual Progress

The detail of the annual program and progress of CVL for FY 2081-82 is given in table below.

Table 1: Annual program and progress report of CVL in the Fiscal Year 2081-82

S.N.	Activities	Unit	Target	Progress
1	Parasitology			
1.1	EPG counts of parasites	Number	400	482
1.2	Skin scrapping examination	Number	50	79
1.3	Larvae culture of parasite	Number	40	40
2	Pathology			
2.1	Clinical hematological examination	Number	1000	1908
2.2	Biochemical examination	Number	600	2294
2.3	Post-Mortem Examination	Number	2400	4838
2.4	Histopathological examination	Number	40	40
3	Microbiology			
3.1	Bacteriology			
3.1.1	Isolation and Identification of Bacteria	Number	800	1741
3.1.2	Sample collection, Isolation and Identification of Fungus	Number	40	44
3.1.3	Participation in EQA, NEQA and dispatch of sample to Veterinary Laboratories and report compilation	Times	4	4
3.2	Virology			
3.2.1	Rabies test	Number	60	372
3.2.2	Investigation of PPR outbreak	Times	4	4
3.2.3	PPR Diagnosis by Pen-side Test	Number	80	189
4	Serology			
4.1	Sero-monitoring of PPR (National PPR Disease Control Program)	Number	6000	6000
4.2	Poultry sample collection and examination for salmonella and Mycoplasma	Times	8	8
4.3	BSE Surveillance	Number	50	52
4.4	Screening of cattle and buffalo disease in government and private farm. <i>M. bovis</i> , CCHF, CBPP, blood parasites	Number	400	1075
4.5	Screening of goat disease in government and private farm (CCPP, Brucellosis etc.)	Number	400	400
4.6	Enterotoxaemia test in Sheep and goat	Number	80	84
4.7	Testing of Salmonella and Mycoplasma (ELISA)	Number	200	872
5	Molecular unit			
5.1	Molecular Diagnostic examination for Bird-Flu	Number	400	714
5.2	Molecular diagnosis (LSD, Anthrax etc.)	Number	100	338

S.N.	Activities	Unit	Target	Progress
5.3	Molecular diagnosis (Salmonella, PRRS, Erysipelas etc)	Number	100	417
5.4	Molecular diagnosis (PPR, CCPP, Pasturella etc)	Number	100	284
5.5	Diagnosis of Glanders in Horse and Mules	Number	40	42
5.6	Dispatch of sample to international reference laboratories	Times	2	1
5.7	Molecular testing for bacterial resistance gene	Number	20	20
6	Disease surveillance and investigation			
6.1	Emergency disease investigation team (EDIT) deploying	Times	12	12
6.2	Outbreak investigation for animal diseases	Times	4	4
6.3	Surveillance of poultry disease (AI, ILT etc.)	Number	400	480
6.4	Avian Influenza Surveillance	Number	800	1152
6.5	AMR surveillance in Poultry	Number	80	80
7	Zoonotic disease Investigation			
7.1	Sample collection and examination for Brucella	Number	160	220
7.2	Surveillance of zoonotic diseases (Toxoplasmosis, Leptospirosis etc.)	Number	400	3106
8	Staff development			
8.1	Laboratory Technology Transfer	Times	8	8
9	Public Health Program			
9.1	Veterinary Drug Residue Testing	Number	800	1022
9.2	Hormones detection in milk and meat	Number	150	160
9.3	Post vaccination Rabies antibody titre testing	Number	200	385
10	Laboratory Monitoring			
10.1	Monitoring and inspection of veterinary laboratories at provincial and local level	Times	8	8
10.2	Monitoring managemental aspects of Veterinary Laboratories	Times	8	8
11	Publications			
11.1	Publication of annual technical bulletin	Times	1	1
11.2	Update of Laboratory quality Manual	Times	1	1
12	Laboratory Management			
12.1	Health examination of staffs	Person	39	20
12.2	LIMS Management	Times	12	12
12.4	Management of Serum Bank	Times	12	12

Chapter III: Laboratory Services

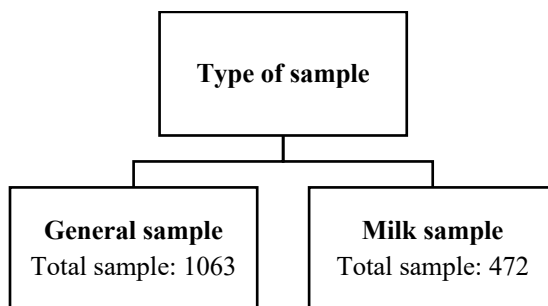
6. Microbiology section

The microbiology section consists of two units, viz Bacteriology and Mycology unit, and Virology unit.

6.1 Bacteriology and Mycology unit

6.1.1 Type of samples

In the fiscal year 2081/82, the bacteriology unit received 1535 samples from various sources such as farms, Central Referral Veterinary Hospital (CRVH), private clinics, veterinary laboratories, veterinary hospitals, and livestock service expert centers (VHLESC), and directly from the field-collected during the periodic sampling. The sample received were two types:



The general samples include urine, blood, nasal swabs, ear swabs, skin scrapping of animals, tissues of animals collected during postmortem examination, water and the animal feed. Milk samples include milk from cattle, buffaloes. Similarly, milk samples were also brought by farmers for testing when they found their animal sick for any reason. Most of the environment samples included water from different farms and swab from farm premises.

6.1.2 Types of isolates

Out of the total 1063 general samples, 701 (65.97%) showed bacterial growth, and out of 472 milk samples, 442(93.65%) showed bacterial growth on culture. Of the 1063 general samples, 24 different types of isolates were identified by cultural characteristics, gram's staining, biochemical tests. Also, few of the bacteria were identified via MALDI TOF, VITEK and BD PHOENIX. Similarly, out of 472 milk samples, 12 different types of bacteria and molds were identified. The description of various bacteria isolated in general sample and milk sample are shown in tables below.

Table 1: Organism isolated from general samples.

S.N.	Organism	Nos.
1	<i>Escherichia coli</i>	517
2	<i>Klebseilla spp.</i>	26
3	<i>Staphylococcus spp.</i>	25
4	<i>Pseudomonas spp.</i>	22
5	<i>Salmonella spp.</i>	20
6	<i>Enterococcus spp.</i>	11
7	<i>Pseudomonas aeruginosa</i>	11
8	<i>Proteus spp.</i>	10
9	<i>Pasteurella spp.</i>	10
10	<i>Bacillus spp.</i>	6
11	<i>Enterobactor spp.</i>	6
13	<i>Shigella</i>	5
14	<i>Citrobacter spp.</i>	4
15	<i>Streptococcus spp.</i>	4
16	<i>Unidentified / Unknown</i>	4
17	<i>Aspergillus spp.</i>	3
18	<i>Mannheimia spp.</i>	3
19	<i>Aeromonas spp.</i>	2
20	<i>Candida spp.</i>	2

Table 2: Organism isolated from milk samples.

S.N.	Organism	Nos.
1	<i>Klebseilla spp.</i>	125
2	<i>Staphylococcus spp.</i>	91
3	<i>Escherichia coli</i>	61
4	<i>Enterococcus spp.</i>	48
5	<i>Streptococcus spp.</i>	43
6	<i>No growth seen</i>	29
7	<i>Pseudomonas spp.</i>	26
8	<i>Enterobactor spp.</i>	20
9	<i>Bacillus spp.</i>	7
10	<i>Citrobacter spp.</i>	5
11	<i>Klebsiella pneumoniae</i>	5
12	<i>Unidentified / Unknown</i>	4
13	<i>Pseudomonas aeruginosa</i>	2
14	<i>Serratia spp.</i>	2
15	<i>Staphylococcus aureus</i>	2
16	<i>Candida spp.</i>	1
17	<i>Micrococcus spp.</i>	1

21	<i>Mucor</i>	2
22	<i>Penicillium spp.</i>	2
23	Other species	7
	Total sample with bacterial growth	702
	No growth	361
	Grand total	1063

Table 3: Month wise bacterial species isolated from general samples submitted to CVL.

Organism	Shrawan	Bhadra	Ashoj	Kartik	Mangsir	Poush	Magh	Falgun	Chaitra	Baishakh	Jesth	Asar
<i>Escherichia coli</i>	67	36	20	25	49	24	20	36	48	57	64	60
<i>Klebsella spp.</i>	11	8	2	1				1		2		
<i>Bacillus spp.</i>	5	1										
<i>Pasteurella spp.</i>	4		2		1		2					
<i>Pseudomonas spp.</i>	4	4		2	1	2	3		1	1	2	11
<i>Staphylococcus spp.</i>	3	1	2	1				3	2	3	4	5
<i>Salmonella spp.</i>	2	1		2	2			1	2	2	5	1
<i>Enterococcus spp.</i>	2			2	2				1	2	1	
<i>Citrobacter spp.</i>	2									1	1	
<i>Proteus spp.</i>	2			1	1		2	1	1		1	
<i>Enterobacter</i>		1	2						1		1	
<i>Acinetobacter</i>					1							
<i>Aeromonas</i>					2							
<i>Streptococcus spp.</i>						1				1		1
<i>Mucor</i>						1						
<i>Penicillium spp.</i>							1				1	
<i>Providencia spp.</i>						1						
<i>Stenotrophomonas spp.</i>											1	
<i>Serratia</i>										1		
Unidentified			2								5	6
No growth seen	33	30	26	21	19	28	48	23	30	27	35	33
Total	134	83	56	55	78	58	79	65	86	98	121	124

Table 4: Month-wise bacterial species isolated from Milk samples submitted to CVL.

Organism	Shrawan	Bhadra	Ashoj	Kartik	Mangsir	Poush	Magh	Falgun	Chaitra	Baishakh	Jesth	Asar
<i>Klebsella spp.</i>	23	26	19	8	1	1	1		1	2	7	21
<i>Escherichia coli</i>	8	6	6	36	20	25	25	7		4	8	9
<i>Enterococcus spp.</i>	7	9				2	2	2	4		3	3
<i>Staphylococcus spp.</i>	6	6	3	1	3	1	1	1	11	7	17	15
<i>Enterobacter spp.</i>	5	2		1	2			1	1		1	1
<i>Pseudomonas spp.</i>	5	4	3	4		2	2			1	3	9
<i>Streptococcus spp.</i>	4	5	2					2	6	1	8	6
<i>Bacillus spp.</i>	2											1

Organism	Shrawan	Bhadra	Ashoj	Kartik	Mangsir	Poush	Magh	Falgun	Chaitra	Baishakh	Jesth	Asar
<i>Bacillus spp.</i>		2	1	1				1				1
<i>Micrococcus</i>		1	1									
<i>Serratia spp.</i>			1									
<i>Salmonella</i>				1		1	2					
<i>Pasteurella</i>					2							
<i>Citrobacter</i>								1		1		
Unidentified		3		1	2	1	1			2		
No growth seen	1		3	30	26	21	21	1	4	4	6	7
Grand Total	61	64	40	83	56	55	55	16	27	22	53	74

6.1.3 Antimicrobial Susceptibility Testing

All the bacterial isolates from the culture were routinely tested for their antimicrobial susceptibility by disc diffusion methods. The antibiotics against each isolate was matched according to Clinical and Laboratory Standard Institute (CLSI) guidelines, 2024.

6.1.3.1 General sample

All the isolated bacteria were tested for sensitivity using commercially available antimicrobials such as Gentamycin, Ciprofloxacin, Tetracycline, Amikacin, Amoxycillin, Ceftriaxone, Cefoxitin, Chloramphenicol, Sulphanomaide and Trimethoprim, Penicillin G, Imipenem etc. Details of the major five bacteria; *E. coli*, *Salmonella*, *Pseudomonas*, and *Klebsiella* is presented in the table and figure below.

Table 5: AST result on *Escherichia coli*.

Drugs	I	R	S
GM	9.26%	59.52%	31.22%
CIP	5.28%	87.94%	6.78%
T	1.45%	91.64%	6.91%
CRO	3.08%	31.25%	68.75%
FFC	0.63%	62.34%	37.03%
TS	2.83%	70%	27.07%
AP	3.69%	78.86%	17.45%

Table 6: AST result on *Salmonella spp.*

Drugs	I	R	S
GM	7.69%	15.38%	76.92%
CIP	0%	62.50%	37.50%
T	0%	30.26%	69.74%
COT	0%	38.89%	61.11%
FFC	0%	27.78%	72.22%
AP	8.33%	50.00%	41.67%

Table 7: AST result on *Pseudomonas spp.*

Drugs	I	R	S
GM	18.18%	9.09%	72.73%
Cip	14.29%	14.29%	71.43%
IE	0%	10.00%	90.00%
A	0%	85.71%	14.29%
T	14.29%	71.43%	14.29%

Table 8: AST result on *Klebsiella spp.*

Drugs	I	R	S
GM	0%	30.00%	70.00%
CIP	33.33%	33.33%	33.33%
T	0%	50.00%	50.00%
AP	0%	100%	0%
FFC	0%	50.00%	50.00%
COT	0%	50.00%	50.00%

6.1.3.2 Milk sample

Bacterial growth in milk samples were subjected to antibiotic sensitivity test with different antibiotic panels. The detail description of major five bacteria; *E. coli*, *Staphylococcus*, *Streptococcus*, and *Klebsiella* is depicted on table below.

Table 9: AST result on *Escherchia coli*.

Drugs	I	R	S
G/Gm	15.69%	23.53%	60.78%
CIP	10.20%	48.98%	40.82%
LEV	16.67%	16.67%	66.67%
T	0%	41.18%	58.82%
CRO	10.00%	10.00%	80.00%
AP	1.9%	68.50%	30.00%

Table10: AST result on *Staphylococcus spp.*

Drugs	I	R	S
G/GM	4.23%	21.13%	74.65%
Cp/CIP	11.94%	29.85%	58.21%
T	0%	23.81%	76.19%
CRO/CTR	0%	50.00%	50.00%
FOX	0%	46.67%	53.33%
AP	0%	13.33%	86.67%
PG	0%	45.45%	54.55%

Table 11: AST result on *Streptococcus spp.*

Drugs	I	R	S
G/GM	5.26%	31.58%	63.16%
Cp/CIP	31.25%	28.13%	40.63%
LE	0%	22.22%	77.78%
A	3.70%	7.41%	88.89%
T	4.55%	59.09%	36.36%
AP	10.00%	0%	10.00%
COT	3.33%	26.67%	70.00%

Table 12: AST result on *Klebsiella spp.*

Drugs	I	R	S
G/GM	8.18%	9.09%	82.73%
Cp/CIP	21.43%	27.55%	51.02%
LE	7.41%	7.41%	85.19%
A	0%	100%	0%
T	2%	18%	80%
CRO	0%	22.22%	77.8%

Note: I=Intermediate, R=Resistant, S=Sensitive, GM=Gentamycin, CIP=Ciprofloxacin, T=Tetracycline, CRO= Ceftriaxone, FOX= Cefoxitin, C= Chloramphenicol, TS=Sulphanomaide and Trimethoprim, PG=Penicillin G, FFC= Florphenicol, NA = Not applicable.

6.1.4 Antimicrobial resistance surveillance

Antimicrobial resistance (AMR) has emerged as one of the major global challenges in both animal and public health. CVL is the national reference laboratory for the AMR surveillance from Animal Health sector. Being a national referral laboratory CVL works in close collaboration with National Public Health Laboratory (NPHL) which is the national referral center for AMR surveillance in Nepal. For the quality assurance of the works conducted in microbiology unit, CVL participates in National External Quality Assessment (NEQA), and quarterly receives unknown bacterial strains from NPHL for isolation, identification, and antimicrobial susceptibility test reporting. Along with this, CVL also participates in EQA with Mahidol University, Thailand and Chulalongkorn University, Thailand, in collaboration with Denmark Technical University (DTU) quarterly. CVL also conducts NEQA in animal health sector. Samples are sent to the Department of Food Technology and Quality Control laboratory, NADIL and peripheral veterinary laboratories within the country.

In recent years, the Fleming Fund Country Grant in Nepal (FFCGN) and FAO has supported CVL in capacity building through human resources training, infrastructure development. These agencies have also supported in the document preparation including surveillance plans and guidelines. As a part of Flemming fund support, CVL has initiated a program for active AMR surveillance program in poultry fecal and cecal samples since 2020. The main targeted bacteria for the surveillance are *E. coli*, *Salmonella*, *Enterococcus*, and *Campylobacter* spp. CVL is leading the active surveillance activity, and three veterinary laboratories of Biratnagar, Pokhara, and the NADIL, Chitwan, are participating in this program.

In addition, the microbiology unit of CVL had participated in the WHO tricycle project on Extended Spectrum *E. coli* (ESBL)-Animal health component in collaboration with NPHL, focusing on the resistance patterns of ESBL *E. coli* in healthy chicken through the One Health approach.

6.2 Virology unit

This unit is responsible for the diagnosis of viral diseases. Most of the samples for virological testing are submitted from the postmortem unit of CVL, followed by Veterinary Laboratories in different provinces, NADIL, CRVH and VHLSEC. Samples are also submitted by quarantine check posts, private clinicians, farmers, and staffs of CVL during disease outbreak investigations. The unit has a facility for competitive ELISA, Fluorescent Antibody Test, Plate Agglutination Test and Lateral Flow Assay. Mainly, Lateral Flow Assay is used for the initial screening of Avian Influenza, Newcastle Disease, Infectious Bursal Disease, Infectious Bronchitis, PPR, ASF and Rabies. For the confirmatory diagnosis of Avian Influenza, Newcastle Disease, PPR and ASF samples are sent to the Molecular Section. Likewise, the confirmatory diagnosis of rabies is done through the Fluorescent Antibody Test (FAT) and PCR.

6.2.1 Lateral Flow Assay

In the fiscal year 2081/82, a total of 971 samples were tested by rapid test kit method. Month wise test result for different diseases is shown in table below:

Table 13: Rapid diagnostic test record of different viral diseases.

Disease		Shrawan	Bhadra	Ashwin	Kartik	Mangsir	Poush	Magh	Falgun	Chaitra	Baishak	Jestha	Ashad	Total
Avian Influenza	Positive	0	0	0	0	5	3	6	8	2	15	9	14	62
	Negative	9	3	11	16	17	25	19	30	31	31	34	52	278
Infectious Bursal Disease	Positive	1	1	3	4	8	2	0	4	13	16	13	14	79
	Negative	6	4	2	1	7	4	0	6	15	9	9	12	75
New Cattle Disease	Positive	0	1	0	3	1	1	8	4	2	4	4	0	28
	Negative	2	4	6	10	2	5	5	2	3	3	3	1	46
Rabies	Positive	11	31	13	30	10	36	26	22	21	14	33	24	271
	Negative	3	7	2	6	11	8	2	4	14	2	7	7	73
PPR	Positive	1	0	0	0	0	0	0	0	0	0	0	1	2
	Negative	2	4	3	1	0	2	0	1	1	0	1	2	17
Infectious Bronchitis	Positive	0	0	0	1	0	0	0	1	1	1	2	4	10
	Negative	1	3	0	1	3	0	4	0	0	1	3	5	21
African Swine Fever	Positive	0	0	0	0	0	0	2	2	3	0	0	1	8
	Negative	0	0	0	0	0	0	0	0	0	0	0	1	1
Total		36	58	40	73	64	86	72	84	106	96	118	138	971

6.2.2 Rabies diagnosis

In the fiscal year 2081/82 (2024/25), 372 rabies suspected samples were tested out of which 323 (86.83%) were found to be positive.

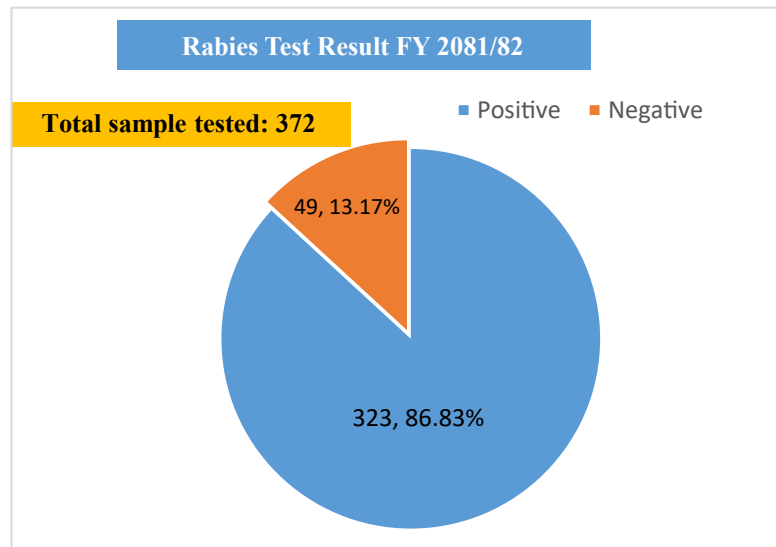


Figure 1: Number of Rabies sample tested in 2081/82

The bar chart below shows the number of rabies samples tested and the number of positive cases over the ten year time frame (2014/15 to 2024/25). The number of samples test and the positive cases has significantly increased from fiscal year 2022/23.

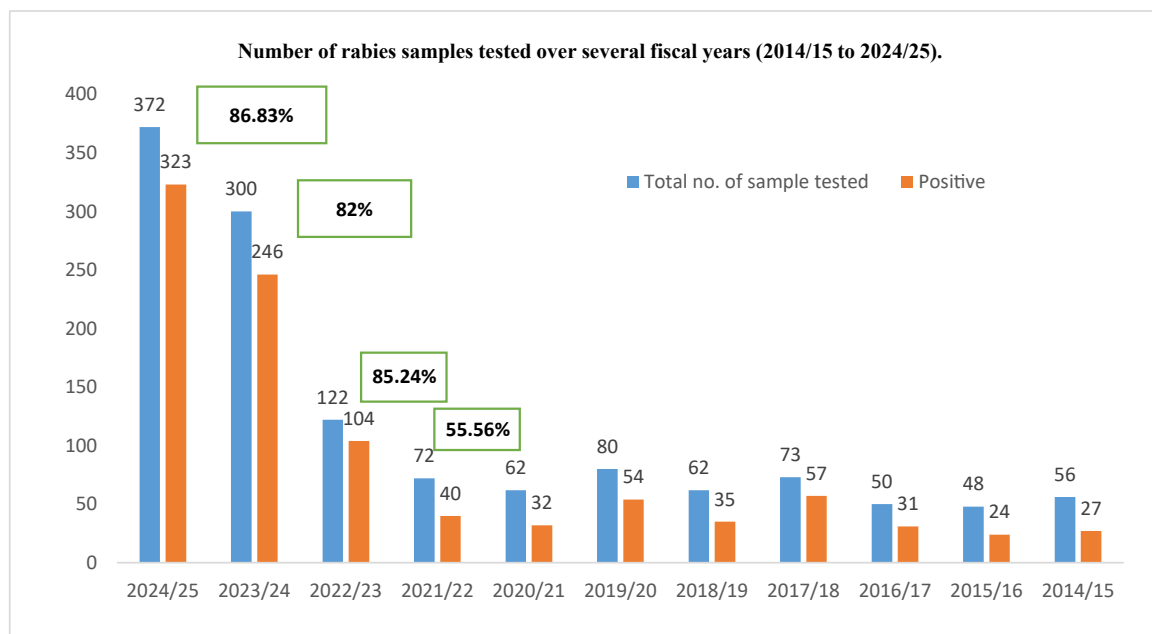


Figure 2: Number of Rabies Samples Tested Over Several Fiscal Years

A total of 323 positive rabies cases were identified across various animal species. Dogs constituted the majority of these cases, with 181 dogs testing positive, demonstrating a high positivity rate of 85.78%.

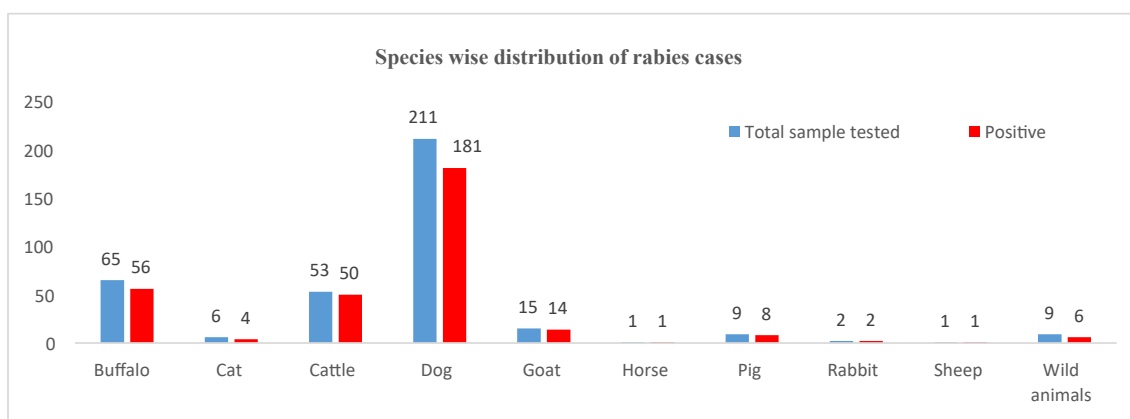
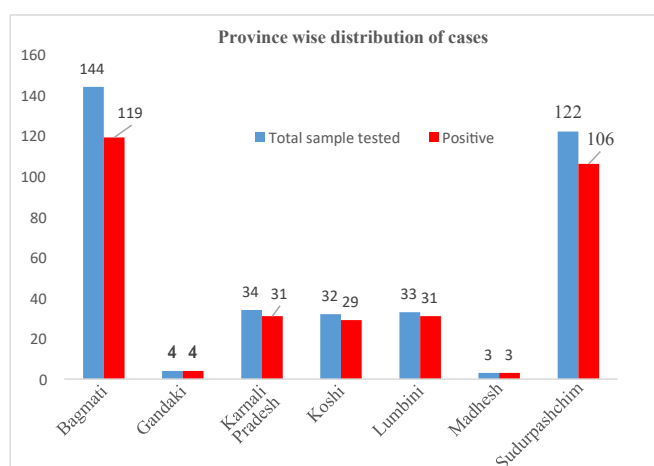


Figure 3: Species wise distribution of Rabies Cases

Bagmati Province reported the highest number of rabies cases, with 144 samples tested out of which 119 samples were positive, followed by Sudurpaschim Province with 106 positives out of 122 samples. Gandaki (4/4), Koshi (29/32), Karnali (31/34), Lumbini (31/33), and Madhesh (3/3) also showed high positivity rates despite fewer samples submitted.



Provinces	No of positive districts
Koshi	8/14
Madhesh	3/8
Bagamati	10/13
Gandaki	2/11
Lumbini	6/12
Karnali	3/10
Sudurpaschim	5/9
Total	37/77

Figure 4: Province wise distribution of cases

In the fiscal year 2081/82, rabies - positive cases were found in samples from 37 districts.

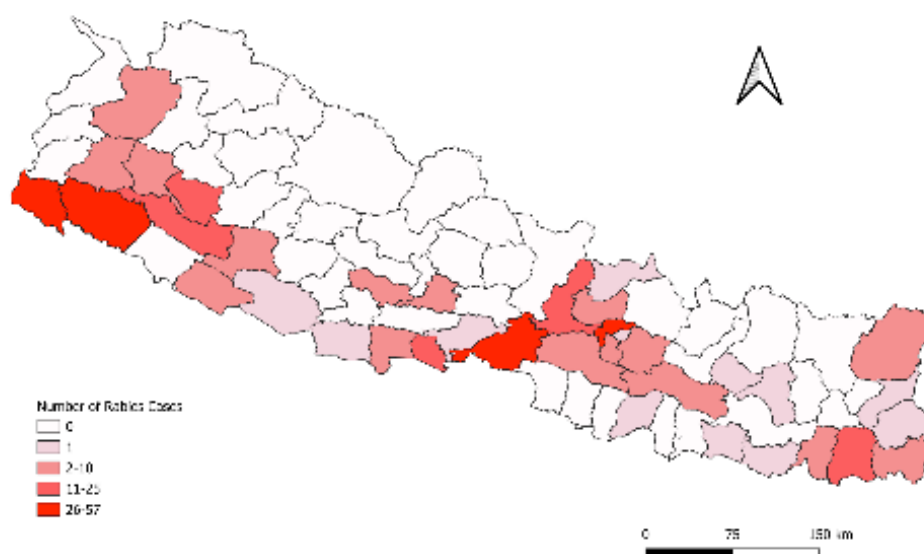


Figure 5: Spatial Distribution of Rabies Cases

Table 14: District wise distribution of rabies cases

Districts	Total Sample tested	Positive
Kailali	65	57
Kathmandu	59	46
Kanchanpur	41	33
Chitwan	29	27
Dhading	20	18
Surkhet	19	16
Nawalparasi (West)	18	16
Dailekh	12	12
Morang	12	11
Lalitpur	11	9
Nuwakot	9	7
Rupandehi	8	8
Achham	7	6
Doti	7	7
Sunsari	6	6
Makwanpur	5	4
Kavrepalanchok	4	4
Bajhang	3	3
Jhapa	3	3
Salyan	3	3
Sindhuli	3	2
Sunsari	3	2
Syangja	3	3
Taplejung	3	3
Banke	2	2
Bhaktapur	2	1
Gulmi	2	2
Dang	1	1
Dhankuta	1	0
Ilam	1	1
Kapilvastu	1	1
Khotang	1	1
Nawalparasi (East)	1	1
Okhaldhunga	1	1
Panchthar	1	1
Parasi	1	1
Rasuwa	1	1
Saptari	1	1
Sarlahi	1	1
Siraha	1	1
Grand Total	372	323

Among the 372 samples tested at CVL, the highest number of rabies-positive cases were reported from Kailali (57/65), Kathmandu (46/59) and Kanchanpur (33/41), indicating a significant burden in these districts.

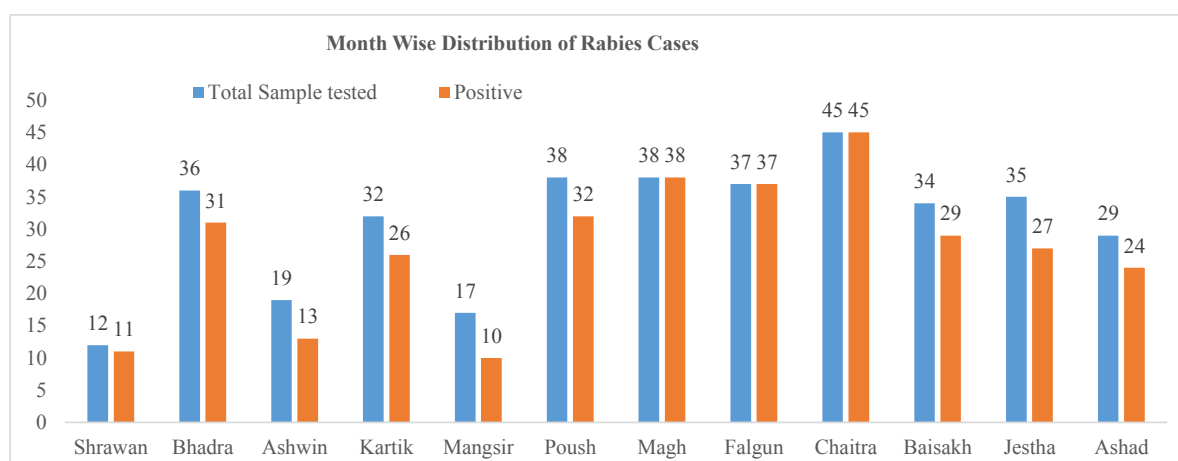


Figure 6: Month-wise distribution of Rabies Cases

The chart shows monthly rabies cases for fiscal year 2081/82. Chaitra had the highest cases, followed by Magh and Falgun. The lowest were in Mangsir and Shrawan. Most months had a high proportion of positive cases relative to total tested.

7. Pathology section

Pathology section consists of Postmortem unit, Histopathology, Parasitology and Clinical hematology and biochemistry unit. Samples for these units are submitted either by VLs, NADIL, CRVH, VHLSEC and Local level or they are brought directly by the veterinary practitioners, livestock, and poultry farmers.

7.1 Postmortem unit

Post-mortem examination is the first step in disease diagnosis for morbid animals. Along with history, clinical findings, and epidemiological surveillance, it aids in making an accurate diagnosis, which is confirmed through various tests at CVL. In the fiscal year 2081/82, a total of 1667 cases were registered for post-mortem (4838 PM performed). The most common species brought for PM were poultry with 1,585 cases, followed by dogs (44 cases), goats (17 cases), pigs (13 cases), cats (5 cases), Rabbit (2 cases), and Sheep (1 case).

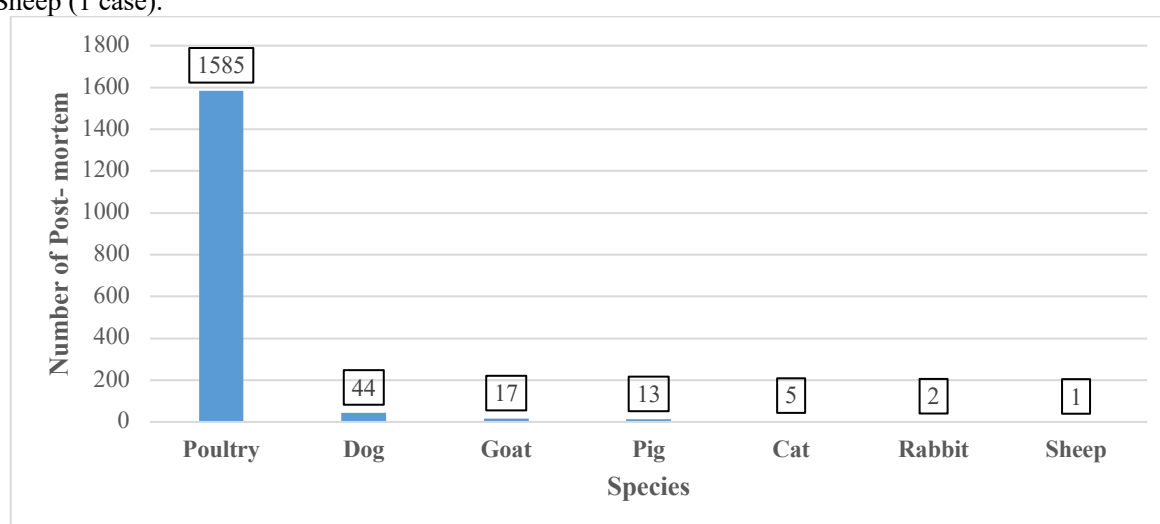


Figure 7: Post-mortem performed in different species during fiscal year 2081/82

The postmortem data from CVL for fiscal year 2081/82 highlights the significant case flow of poultry, which accounted for 1,585 cases (95.08% of the total). These cases encompass a range of infectious and non-infectious conditions, including Colibacillosis, Mycotoxicosis, Ascites, Chronic Respiratory Disease, Immunosuppression and Infectious Bursal Disease reflecting the growing intensive poultry farming in Nepal and the associated challenges of disease management. 44 cases of dogs were brought where Rabies was the predominant condition, underscoring its zoonotic significance and the need for enhanced control measures. 17 cases of goats were brought for PM where parasitic infections like haemonchus Infestation was the most common finding, alongside PPR, Enterotoxaemia, and other conditions, indicating diverse health challenges in small ruminants

The following report summarizes the postmortem examinations conducted by the CVL during the fiscal year 2081/82 (2024/25). The data details the animal species, associated diseases or pathological conditions, and the number of reported cases.

Table 15: Reported Diseases by Animal Species at CVL

Animal Species	Disease/Pathological Condition	Reported Cases
Poultry	Various Diseases (Detailed in the table below)	1,585
Dog	Rabies	44
	Non-specific Disease	
	Pneumonia	
	Vetero-legal cases	
Goat	Haemonchus Infestation	17
	Non-specific Disease	
	Peste des Petits Ruminants	
	PPR/Pneumonia	
	Enterotoxaemia	
	Fascioliasis/Liver Fluke	
	Cestodiasis	
Pig	ASF	13
	Pneumonia	
	Enteritis	
Cat	Rabies	5
	Pneumonia	
Rabbit	Coccidiosis	2
	Rabies	
Sheep	Haemonchosis	1
Total		1,667

The table below provides a monthly breakdown of poultry disease diagnosed based on PM findings at CVL for the fiscal year 2081/82. In total, 1585 cases were diagnosed with different diseases. The most frequent diagnosis was Colibacillosis (29%) followed by Mycotoxicosis (14%), and Ascites (10%). The data below shows details for each disease in a temporal pattern.

Table 16: Month-wise distribution of poultry disease diagnosed at CVL

Disease	Shrawan	Bhadra	Asoj	Kartik	Mangsir	Poush	Magh	Falgun	Chaitra	Baisakh	Jestha	Asadh	Total
Fowl Cholera	0	0	0	2	0	0	0	0	0	0	0	0	2
Pullorum Disease	0	0	0	4	0	0	0	0	0	0	2	0	6
Fowl Typhoid	7	0	1	0	3	1	2	2	1	1	1	6	25
CRD	43	14	10	1	11	7	9	4	12	7	3	3	124
Colibacillosis	52	44	23	22	39	22	32	42	55	57	50	32	470
Infectious Coryza	0	0	0	1	0	0	0	0	0	1	0	0	2
Necrotic Enteritis	4	0	1	0	1	1	0	0	0	0	0	6	13
Omphalitis	0	0	0	1	3	4	4	6	10	3	3	7	41
CCRD	0	0	0	1	0	1	5	4	5	9	2	3	30
Avian Influenza	0	0	0	0	3	3	6	5	1	16	10	15	59
Newcastle Disease	6	0	2	2	1	2	8	4	2	6	5	1	39
IBD	14	7	14	2	8	1	0	4	14	27	19	21	131
Infectious Bronchitis	0	0	0	1	0	1	0	1	1	0	3	2	9

Disease	Shrawan	Bhadra	Asoj	Kartik	Mangsir	Poush	Magh	Falgun	Chaitra	Baisakh	Jestha	Asadh	Total
Marek's Disease	0	0	0	0	0	1	0	1	0	0	0	2	4
Avian Leucosis Complex	0	0	0	0	0	0	2	0	2	1	0	1	6
Avian Encephalomyelitis	0	0	0	0	0	0	0	0	1	0	0	0	1
Litchi Heart Disease	0	0	0	0	0	0	0	0	0	0	0	1	1
Mycotoxycosis	46	18	34	7	14	3	12	13	17	11	34	39	248
Coccidiosis	0	0	0	0	4	2	1	5	2	3	1	4	22
Cestodiasis	0	0	0	0	0	0	0	0	0	0	1	0	1
Histomoniasis	0	0	0	0	0	0	0	0	0	0	1	0	1
Fatty Liver Syndrome	0	0	0	3	1	2	0	0	2	2	2	1	13
Ascites	6	6	3	4	23	14	23	37	16	10	10	5	157
Gout	0	0	0	2	1	2	2	1	1	2	5	7	23
Non-specific Disease	0	0	0	0	0	2	1	0	0	1	1	1	6
Immune Supression	3	0	0	1	5	13	9	9	18	14	13	24	109
Urolithiasis	0	0	0	0	0	0	0	0	1	0	0	6	7
Nephritis	0	0	0	1	0	0	0	0	1	1	3	3	9
Stress	4	4	4	0	0	0	0	0	0	0	0	0	12
Ascariasis	0	0	0	1	0	1	1	2	0	0	1	2	8
Egg Peritonitis	0	0	0	0	0	0	0	0	0	0	1	5	6
Total	185	93	92	56	117	83	117	140	162	172	171	197	1585

Table 17: Distribution of poultry disease in different bird types based on Post-mortem

Disease	Commercial Broilers	Kuroiler	Commercial Layers	Pheasant	Quail	Broiler Parent	Kuroiler Parent	Layer Parent	Duck	Local Poultry	Pigeon	Giriraj Parent	Giriraj	Kalij	Emu	Broiler	Local	Total
Colibacillosis	400	17	14	0	1	11	3	0	1	14	1	0	7	0	0	1	0	470
Mycotoxycosis	85	18	67	1	3	11	2	0	5	36	5	0	5	10	0	0	0	248
Ascites	150	4	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	157
Infectious Bursal Disease	103	8	7	0	0	0	0	0	0	11	0	0	1	1	0	0	0	131
Chronic Respiratory Disease	111	5	2	0	0	2	2	0	2	0	0	0	0	0	0	0	0	124
Immune Supression	71	5	8	0	1	6	0	1	0	12	0	0	4	0	0	0	1	109
Avian Influenza	25	1	15	1	0	0	0	0	3	12	0	0	1	0	0	1	0	59
Omphalitis	31	3	2	0	0	1	0	0	0	0	0	0	0	4	0	0	0	41
Newcastle Disease	8	10	5	1	0	0	0	0	0	13	0	0	1	1	0	0	0	39
CCRD	26	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
Fowl Typhoid	1	4	7	2	0	2	0	0	0	7	0	0	0	2	0	0	0	25
Gout	13	1	2	0	0	0	0	0	0	5	0	0	1	0	1	0	0	23
Coccidiosis	15	2	2	0	0	0	0	0	0	2	0	0	1	0	0	0	0	22
Necrotic Enteritis	1	1	6	1	0	2	0	0	0	2	0	0	0	0	0	0	0	13

Disease	Commercial Broilers	Kuroiler	Commercial Layers	Pheasant	Quail	Broiler Parent	Kuroiler Parent	Layer Parent	Duck	Local Poultry	Pigeon	Giriraj Parent	Giriraj	Kalij	Emu	Broiler	Local	Total
Fatty Liver Syndrome	9	0	2	0	0	0	0	0	0	0	0	0	1	1	0	0	0	13
Stress	9	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	12
Infectious Bronchitis	7	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	9
Nephritis	5	1	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	9
Ascariasis	0	0	3	1	0	0	0	0	0	4	0	0	0	0	0	0	0	8
Others	12	2	11	0	0	3	0	0	0	9	0	1	3	1	0	0	1	43
Total	1082	85	158	8	5	39	7	1	11	131	6	2	25	20	1	2	2	1585

Others Cases includes Fowl Cholera (2), Pullorum Disease (6), Infectious Coryza (2), Marek's Disease (4), Avian Leucosis Complex (6), Avian Encephalomyelitis (1), Litchi Heart Disease (1), Cestodiasis (1), Histomoniasis (1), Non-specific Disease (6), Urolithiasis (7), Egg Peritonitis (6).

The table shows the distribution of various diseases among different types of poultry brought to CVL for post-mortem examinations. Broilers are the most affected, especially with Colibacillosis, Ascites, CRD, and IBD. Layers and local poultry have significant numbers of cases of Mycotoxicosis. Ducks and other less common poultry types have fewer cases overall.

Number of diseases diagnosed in poultry in FY 2081/82 were shown in below bar.

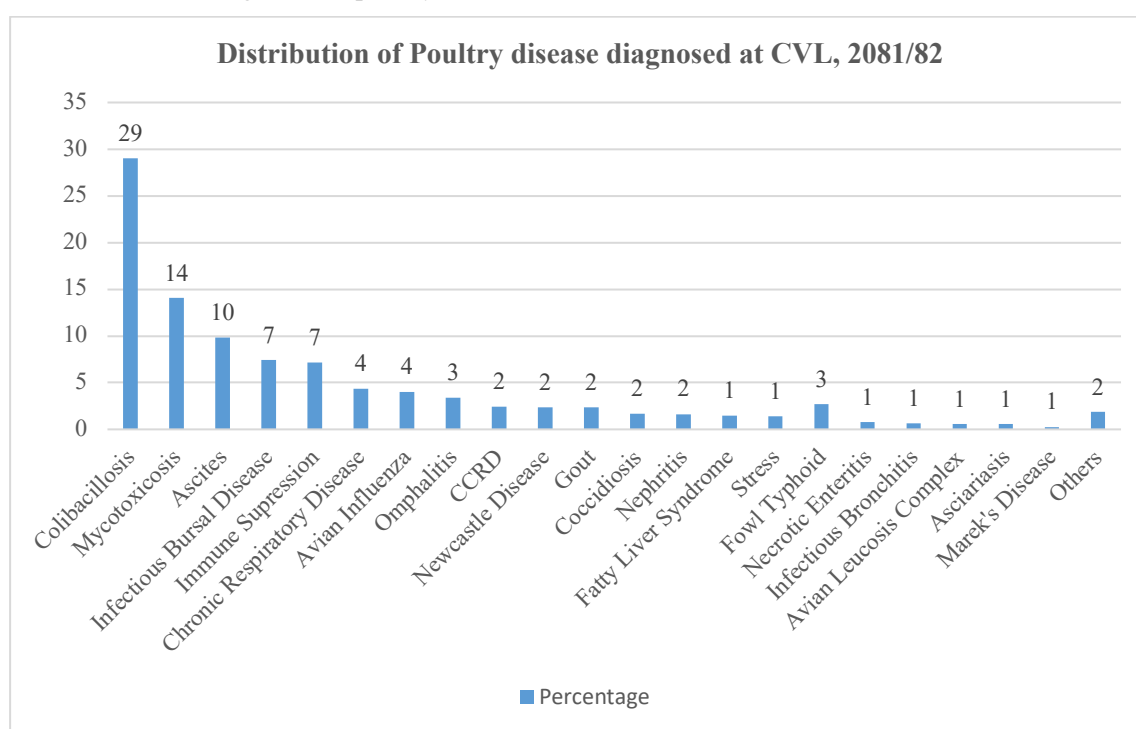


Figure 8: Distribution of Poultry disease diagnosed at CVL, 2081/82

The chart shows the distribution of poultry diseases diagnosed at CVL in 2081/82. The most common diseases were Colibacillosis (29%), Mycotoxicosis (14%), and Ascites (10%). Less common conditions included

7.2 Hematology and biochemistry unit

A total of 2175 blood samples were tested in FY 2081/82. Blood samples were tested for hematological parameters and blood parasites.

7.2.1 Blood parasites

A total of 2,175 blood samples from different animal species were examined for hemoparasitic infections. Overall, 290 (13.33%) samples were positive for at least one hemoparasite, while 1,885 (86.67%) were negative. *Babesia* spp. was the predominant parasite detected (11.45%), followed by *Anaplasma* spp. (1.29%) and *Ehrlichia* spp. (0.41%). Cattle accounted for the highest number of positive cases (219), whereas buffaloes exhibited the highest prevalence (31.11%). *Theileria* spp were not detected during this fiscal year.

Table 18: Blood parasites diagnosed in different animal species in 2081/82

Species	<i>Babesia</i>	<i>Anaplasma</i>	<i>Trypanosoma</i>	<i>Microfilaria</i>	<i>Theilaria</i>	<i>Ehrlichia</i>	Negative	Total
Dog	26	8	1	1	0	9	718	763
Cattle	198	19	2	0	0	0	919	1138
Buffalo	13	1	0	0	0	0	31	45
Goat	9	0	0	0	0	0	165	174
Pig	3	0	0	0	0	0	26	29
Horse	0	0	0	0	0	0	4	4
Cat	0	0	0	0	0	0	2	2
Sheep	0	0	0	0	0	0	15	15
Donkey	0	0	0	0	0	0	3	3
Wild Animal	0	0	0	0	0	0	2	2
Total	249	28	3	1	0	9	1885	2175

In FY 2081/82, 2490 serum samples from different clinical conditions and from livestock farms were tested for biochemical parameters.

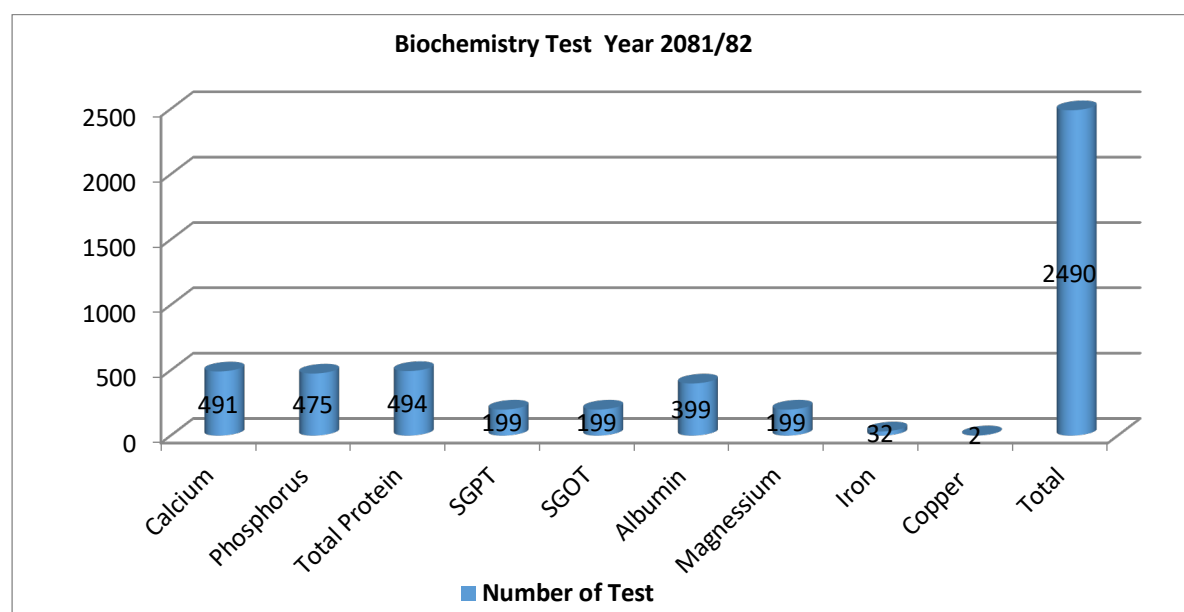


Figure 9: Biochemical test performed during 2081/82

7.2.2 Urology

In FY 2081/82, 56 urine samples from clinical cases were brought by the farmers for urinalysis which were tested using urine analysis strips and microscopic method.

Table 19: Urine sample tested in fiscal year 2081/82

S.N	Animal	Sample Tested	% of sample received
1	Cattle	43	76.8%
3	Dog	11	19.6%
4	Buffalo	2	3.6%
Total		56	100%

8. Molecular biology section

8.1 Molecular biology unit

Molecular biology unit was established in CVL in 2003 A.D. Earlier this laboratory started to diagnose avian influenza by using RT-PCR technique. Later, from 2010, CVL started real time PCR for diagnosis of avian diseases like Avian Influenza (AI), Newcastle disease (ND), and Infectious Bursal Disease (IBD). CVL also started multiplex for respiratory disease of small ruminant (PPR, MCCP, Capripox, Pasteurella) and swine diseases (African swine fever virus, Classical swine fever virus, Salmonella and Erysipelas) and other diseases like Porcine Reproductive and Respiratory Syndrome (PRRS-NA and PRRS-EU), since 2016. Later on, the technologies expand for diagnosis of other zoonotic and economic importance diseases like Glanders, Lumpy skin Diseases (LSD) and Enterotoxaemia. Molecular unit also participate in proficiency testing (PT) for AI, PPR and Swine diseases since 2016.

8.1.1 Avian Influenza

In the Fiscal year 2081/82, a total of 238 swab samples of avian species suspected for avian influenza were received from thirty-one districts. The samples were tested by using Real Time Reverse Transcriptase Polymerase Chain Reaction (qRT-PCR). Out of those samples, 184 (77.3%) samples were found to be positive for sub-type H9N2. During this period, HPAI outbreak also occurred in Sunsari district and 7 suspected samples were found positive for HPAI (H5N8).

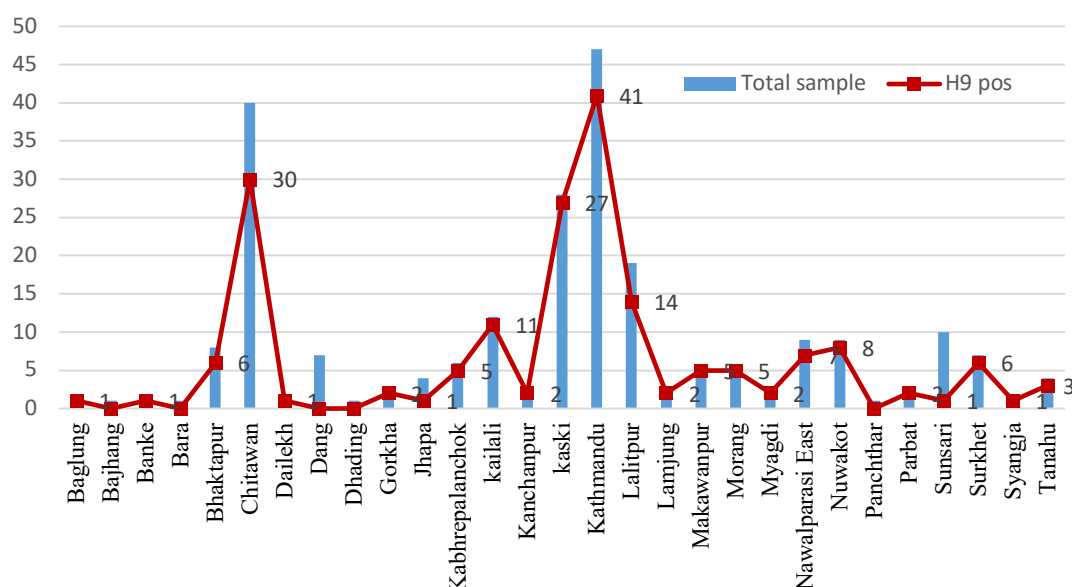


Figure 10: District wise distribution of AI from suspected samples positive for H9 sub-type

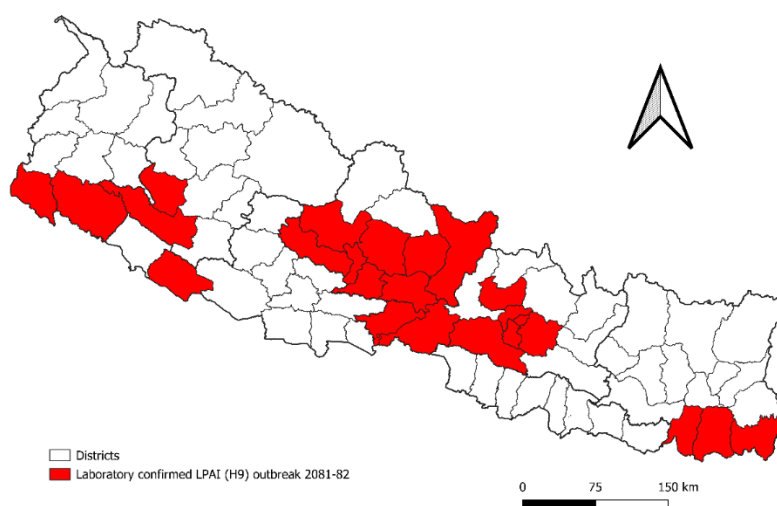


Figure 11: H9 sub-type outbreak districts 2081-82

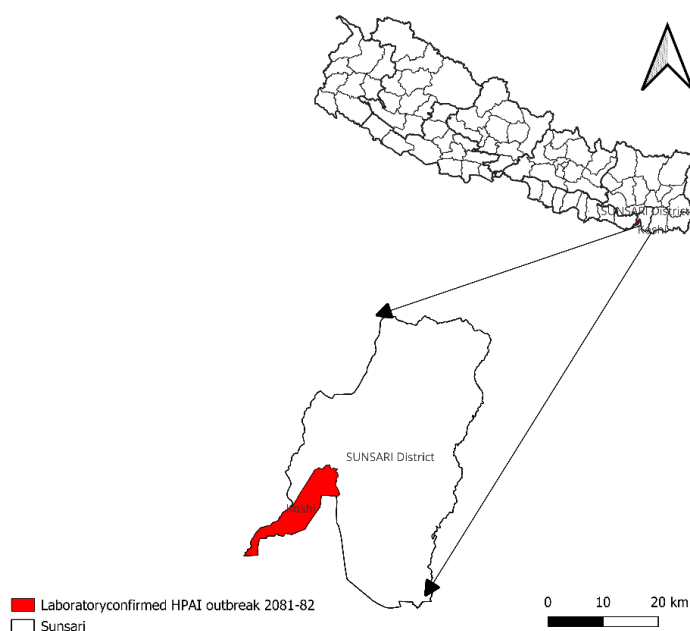


Figure 12: Laboratory Confirmed HPAI (H5N8) outbreak

8.1.2 PPR

A total of 133 samples were received from the 33 district out of which 31.57% were positive from 12 districts. Dhanusha district has the highest number of PPR positive cases from the samples submitted. The figure below shows the district-wise distribution of laboratory confirmed PPR outbreak.

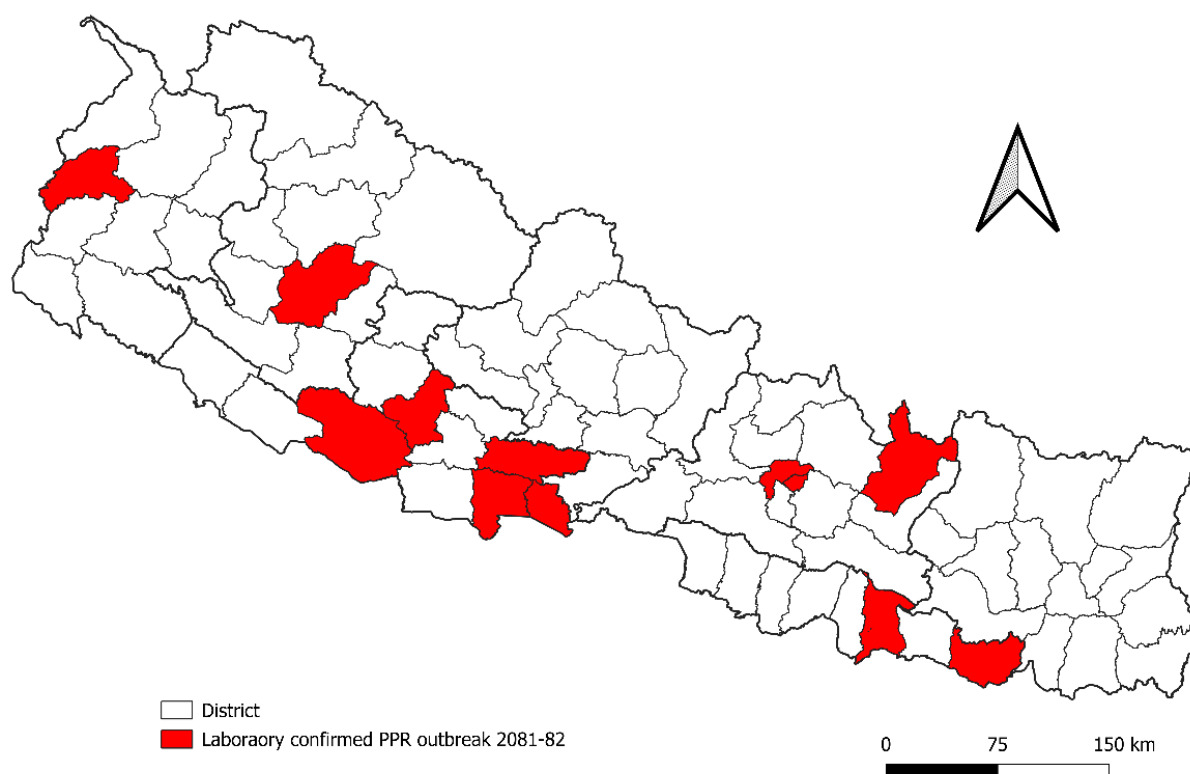


Figure 13: District wise distribution of PPRV in goats.

8.1.3 Lumpy Skin Disease

CVL received bovine samples (Swab/scar/pus) from 33 district for Lumpy Skin Disease (LSD). A total of 185 samples were tested by using qRT-PCR method out of which 44.86% of the samples were positive for LSD.

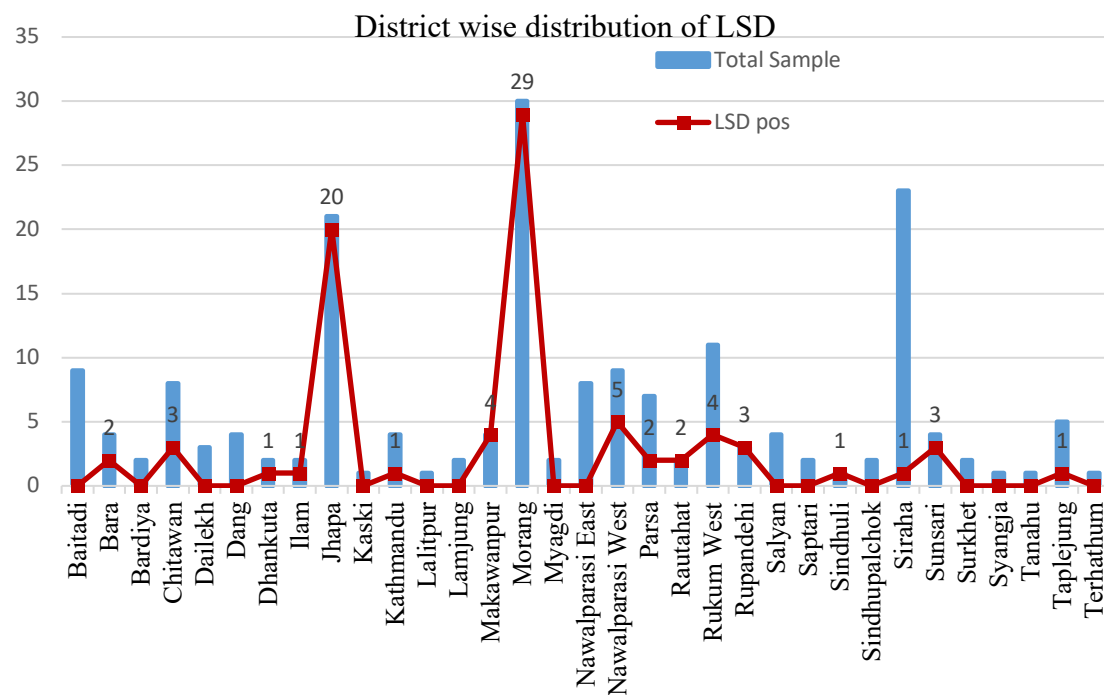


Figure 14: District wise distribution of LSD in bovine.

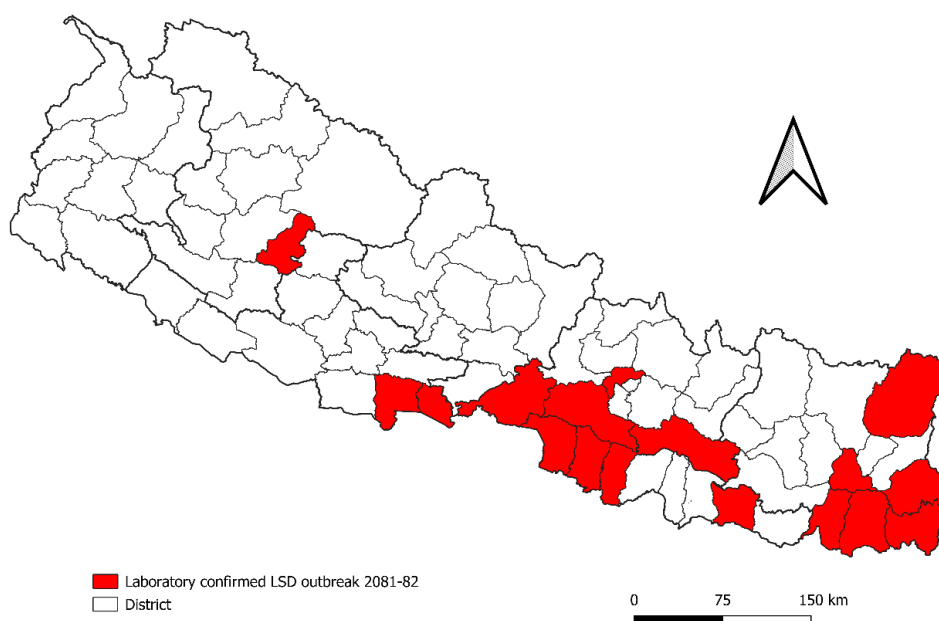


Figure 15: Laboratory Confirmed LSD Outbreak

8.1.4 African Swine Fever

CVL received 180 samples (Tissues/Blood) from 34 districts for the diagnosis of swine diseases. The samples were initially tested for ASF followed by CSF, PRRS-NA, PRRS-EU, Salmonella and Erysipelas. Out of those samples, 45% samples from 20 districts were found positive for ASF. Tanahu district had the highest number of ASF positive cases (13) followed by Kathmandu, Lalitpur and Sunsari, each with 8 positive cases and Makawanpur had 7 positive cases.

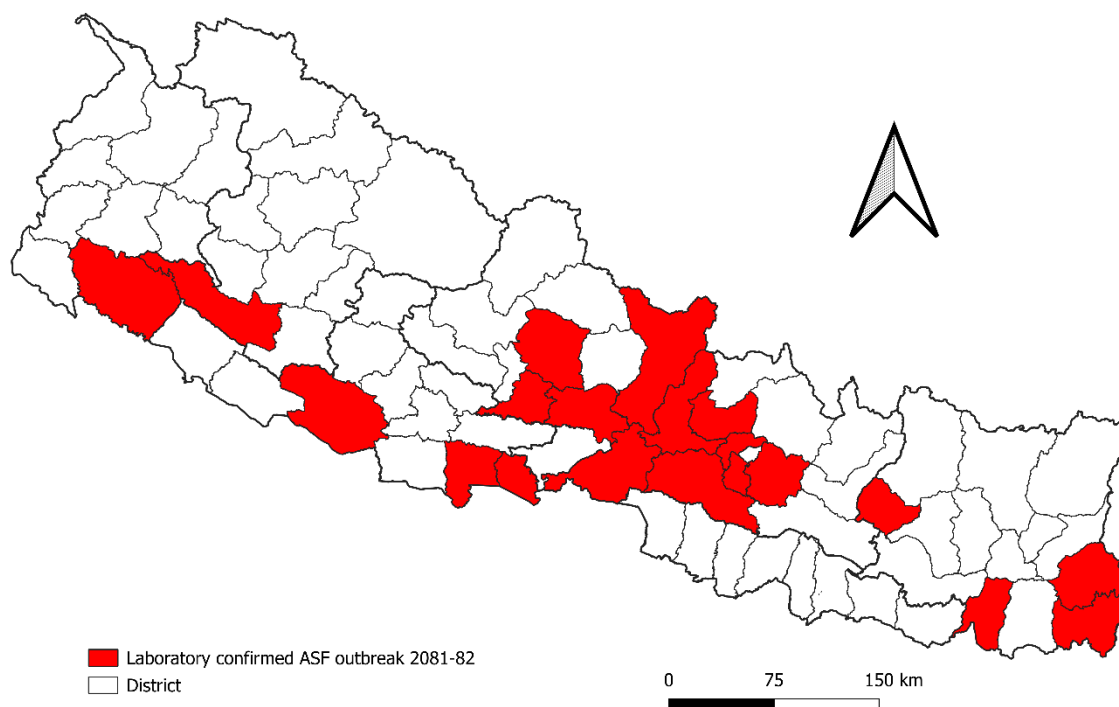


Figure 16: Laboratory Confirmed ASF outbreak

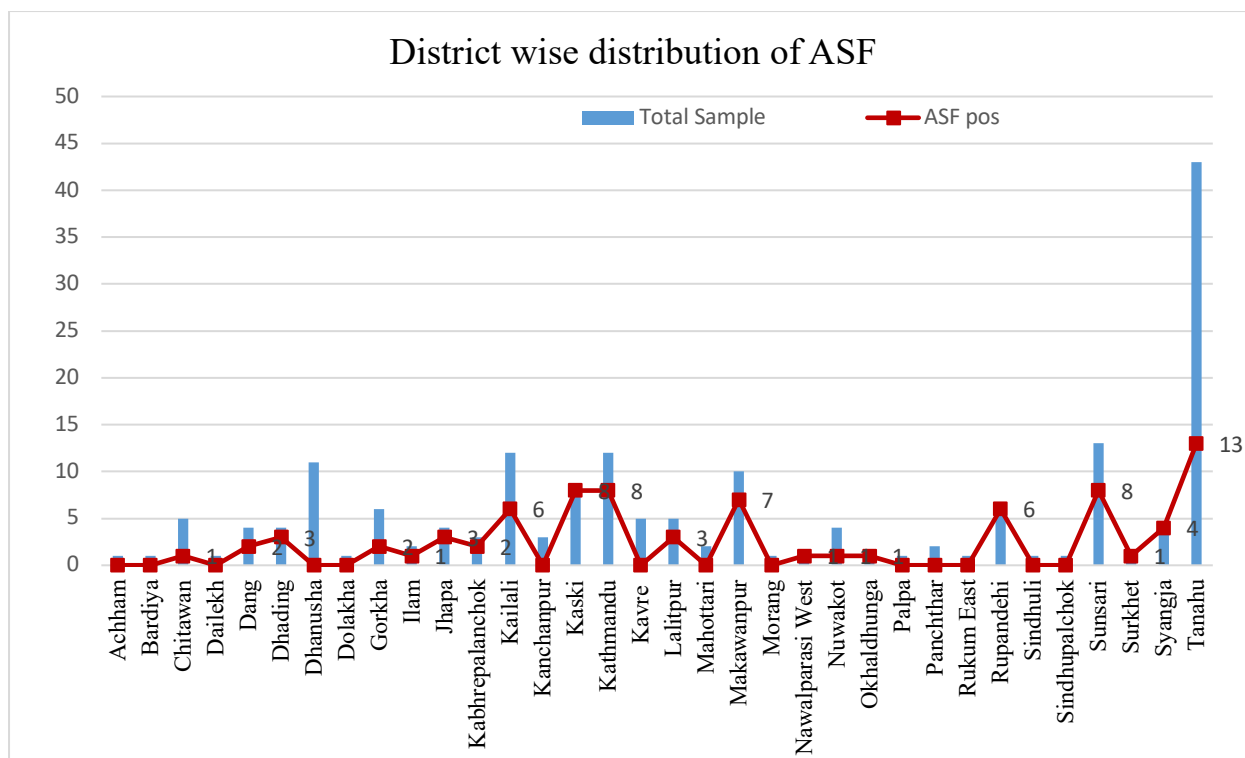


Figure 17: District wise distribution of ASF

8.1.5 Anthrax

CVL received blood samples from 7 districts suspected of Anthrax. A total of 19 samples were tested by using blood smear examination and PCR method. Only 2 samples from Tanahu and Morang were found positive of Anthrax.

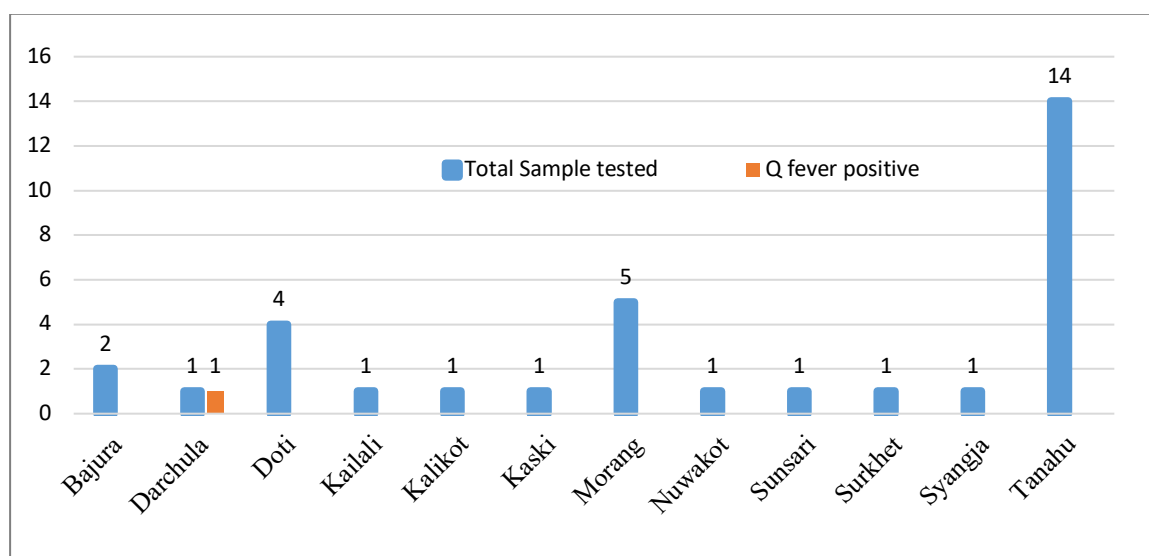


Figure 18: District wise distribution of Anthrax in bovine.

8.1.6 Abortive panels

In FY 2081/82, a total of 33 samples were tested by multiplex qRT-PCR for abortive panels (Brucellosis, Leptospirosis, Listeriosis and Q- fever) from 12 districts. Out of the 33 samples tested, only one sample from Shailyashikhar Municipality, Darchula, was found to be positive for Q- fever.

8.1.7 Respiratory Multiplex test for small ruminants

Likewise, during 2081/82, 140 samples from small ruminants were tested for respiratory multiplex (PPR, Pasteurellosis, Capripox and MCCP). Out of which two samples from sheep of Dhanusha district, Hansapur Municipality were found to be positive for Pasteurellosis.

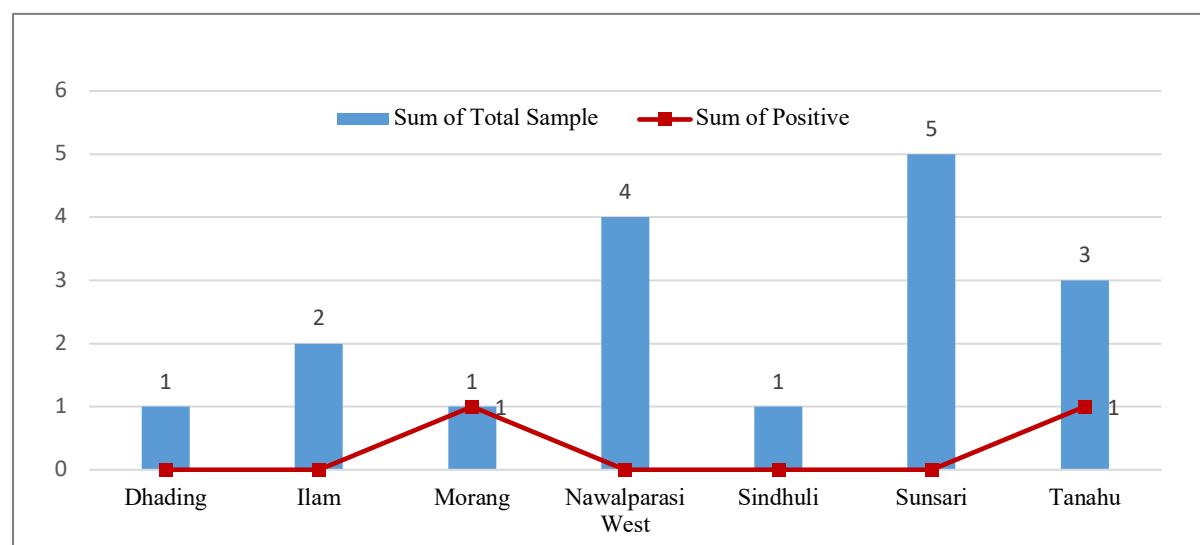


Figure 19: qRT-PCR for abortive panels (Brucellosis, Leptospirosis, Listeriosis and Q- fever)

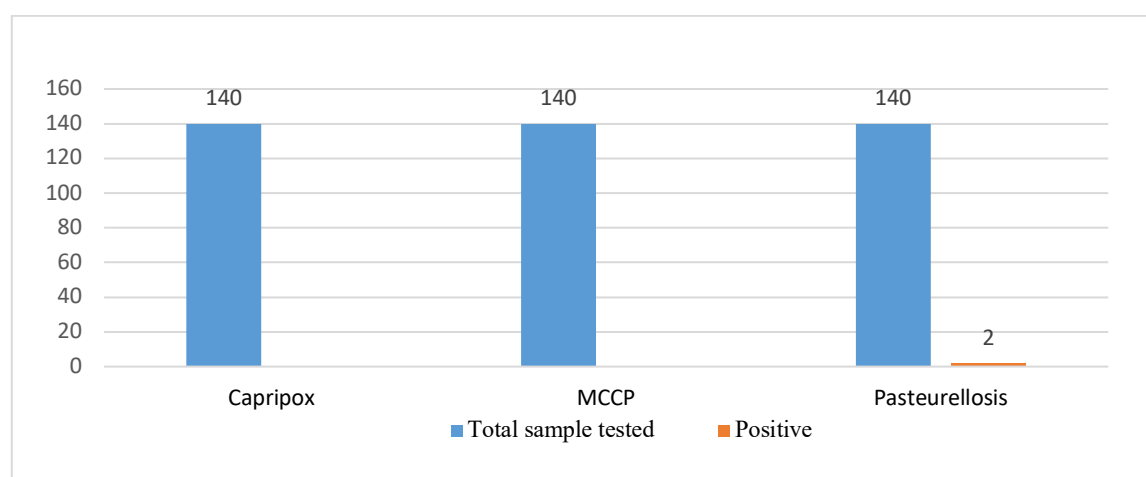


Figure 20: Results of qRT-PCR for Respiratory Disease of Small Ruminants

CVL also performed qRT-PCR for different diseases in FY 2081/82 from different species. The results are summarized in table below.

Table 20: Results of qRT-PCR for different diseases in FY 2081/82

Diseases	Total Sample tested	Positive	Negative	Positive district/Species
Bovine Papular Stomatitis	17	-	17	
Orf	18	-	18	
Cowpox	18	-	18	
Enterotoxaemia	8	3	5	Chitwan (Caprine), Jajarkot (Ovine)
Erysipelas	30	1	29	Sunsari (Swine)
Glanders	19	5	14	Rupandehi and Kailali (Equine)
Hemorrhagic septicemia	26	3	23	Nawalparasi west (Bovine)
Ranikhet	10	3	7	Kaski, Nawalparasi east and Kavrepalanchowk (Commercial Broiler)
Tuberculosis	7	-	7	

Diseases	Total Sample tested	Positive	Negative	Positive district/Species
Nipah	15	-	15	
PRRS-EU	23	-	23	
PRRS-NA	23	1	22	Kailali (Swine)
Pseudocow pox	18	-	18	
Japanese Encephalitis	65	1	64	Mahottari (Swine)
Salmonellosis	30	1	29	Sunsari (Swine)

8.2 Serology Unit

Serology section of CVL performs different serological tests for the diagnosis, monitoring and surveillance of animal diseases. Most of the samples are submitted to this unit by Veterinary Laboratories, NADIL, VHLSEC, Animal Quarantine Check-posts, private veterinary practitioners, farmers and staff of CVL during disease outbreak investigations, routine diagnosis as well as sero-monitoring. This section possesses facility of Competitive Enzyme Linked Immunosorbent Assay (cELISA), Immuno-capture ELISA, Indirect ELISA, Tube agglutination Test, Agar-Gel Immuno-Diffusion (AGID) test, Plate agglutination test.

In fiscal year 2081/82 serology unit received samples from 47 districts for diagnosis of various diseases. Serology unit also participates in proficiency testing (PT) for PPR by ELISA and Brucellosis by PAT since 2016. Progress report of Serological investigation of various diseases in animals and birds during 2081/82 is as follows.

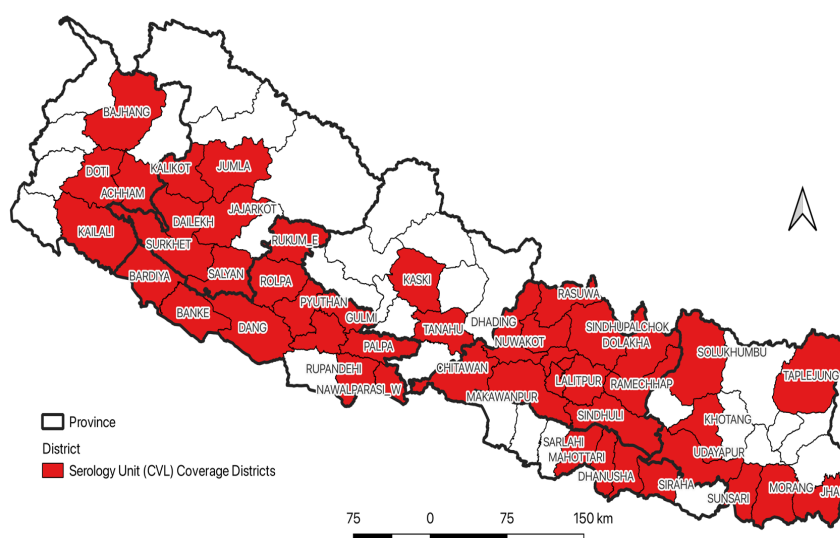


Figure 21: Districts coverage by Serology Unit under Molecular Section of CVL

8.2.1 PPR Seromonitoring

Department of Livestock Services has launched the annual PPR Vaccination Program throughout the country as per National PPR Control Program. CVL is responsible for conducting the seromonitoring of PPR vaccination in the country. In the fiscal year 2081/82 CVL received 6882 serum samples for investigation of seroconversion of PPR vaccination from 30 districts. For this Veterinary Laboratory, Parasi coordinated in collection of samples from the districts under Lumbini Province. VL Dhangadhi collected and tested 1330 samples from 7 districts. Likewise, VL Surkhet tested 780 samples from 4 districts. Similarly, VL Biratnagar collected and tested 1017 samples from 11 districts while VL Pokhara collected and tested 825 samples from 5 districts. Thus, the total samples tested for seroconversion of PPR Vaccination in 2081/82 was 10834 from 54 districts as shown in the Figure 18. The overall seroconversion was 77.26% with 16 districts having seroconversion above 90% and 22 districts having seroconversion above 80%. Likewise 8 districts have seroconversion above 70%. 12 districts have reported seroconversion below 70% of which Arghakhachi and Sankhuwasabha reported very low seroconversion 34.84% and 33.99% respectively. The districtwise seroconversion is shown in Figure 19 and 20.

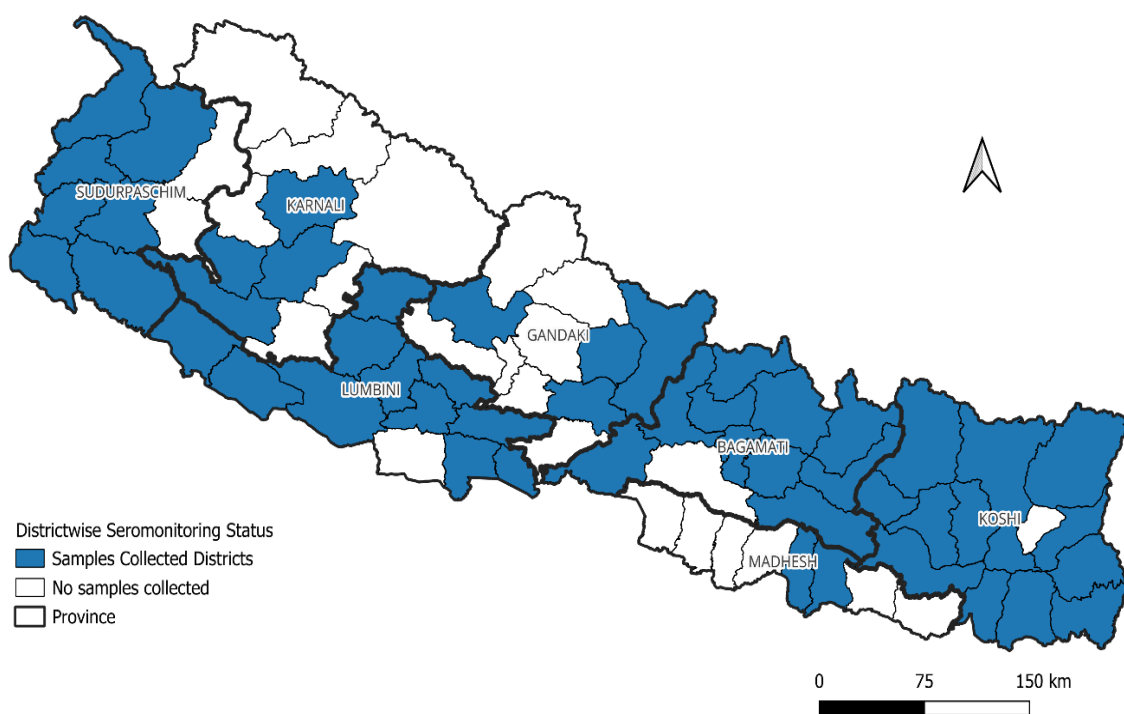


Figure 22: Districts coverage Seromonitoring of PPR Vaccination by CVL and VLs

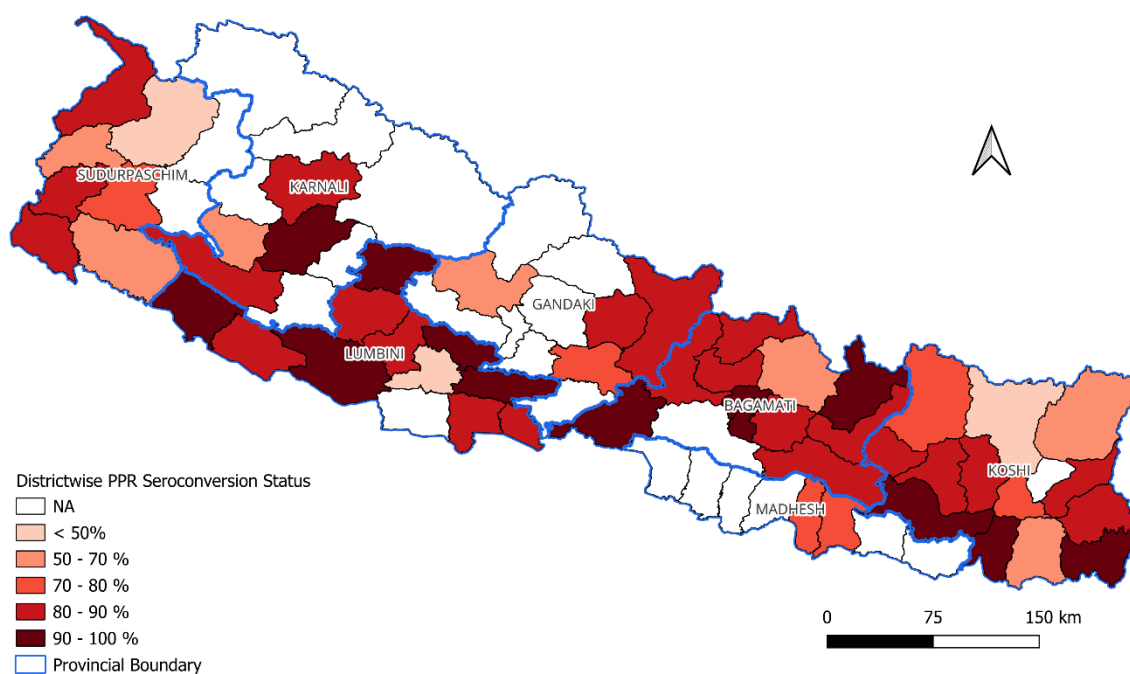


Figure 23: Seroconversion status of PPR Vaccination by districts

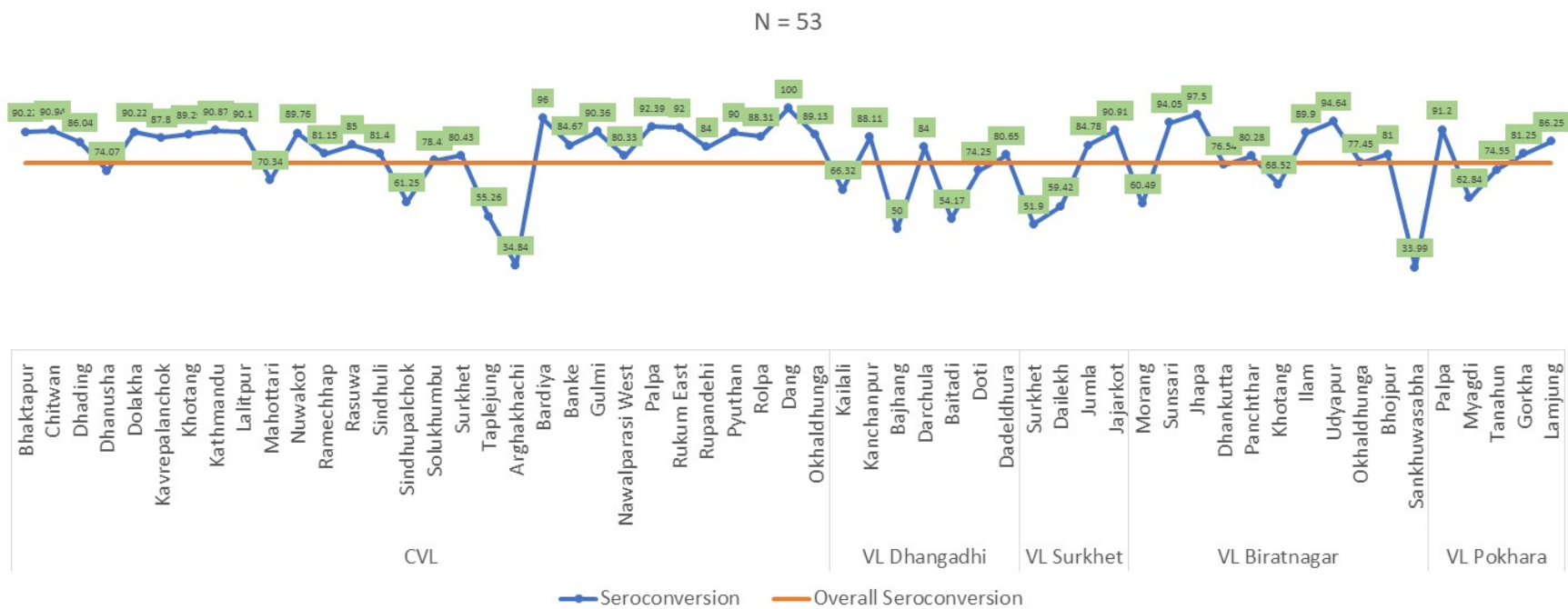


Figure 24: Distritwise seroconversion status of PPR Vaccination

8.2.2 Serological Tests conducted at CVL

In fiscal year 2081/82, total number of samples received at CVL for various serological tests was 2706 with 2204 samples from surveillance were subjected for several serological tests and 502 samples from outbreaks were subjected for several serological tests in CVL. The highest number of samples from surveillance was from Bagamati province (1120) followed by Gandaki province (494). Similarly the highest number of samples from outbreaks was from Koshi province (219) and samples from outbreak was lowest from Lumbini province. The distribution of samples received at CVL by province in fiscal year 2081/82 is presented in Figure 21.

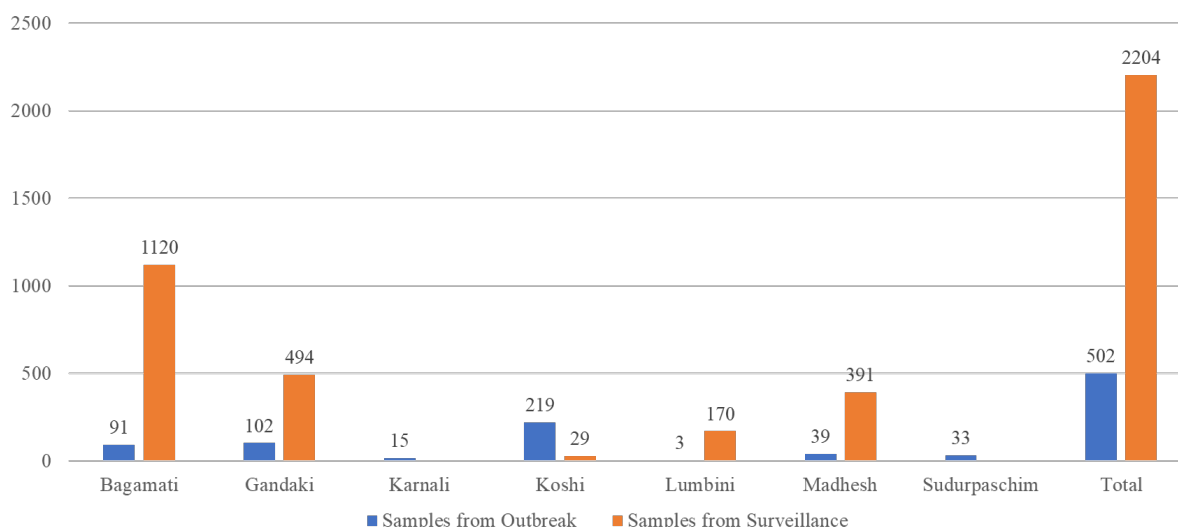


Figure 25: Samples tested at Serological Unit in CVL by Province of Fiscal Year 2081/82

The highest number of samples were obtained for test of Brucellosis (1066) followed by CCPP (809) and Toxoplasmosis (648). The number of samples tested for various diseases by ELISA and PAT is presented in following table with the number of positive samples of respective disease.

Table 21: Samples tested for various diseases at Serology Unit of CVL of FY 2081/82

S. N.	Test for diseases	Total Samples	Positive	Negative
1	Ab ELISA for TB	47	-	47
2	African Horse Sickness Indirect ELISA	2	-	2
3	Brucellosis Antibody ELISA	614	15	599
4	BTB Antibody ELISA	59	-	59
5	BVD p80 Antibody Competition ELISA	48	7	41
6	CCHF Antibody ELISA	412	-	412
7	CI abortus Indirect Multi-sp ELISA	47	1	46
8	Enterotoxemia multiscreen toxin detection ELISA	65	43	22
9	M. gallisepticum Antibody Detection Indirect ELISA	436	13	423
10	M. synoviae Antibody Detection Indirect ELISA	436	26	410
11	Paratuberculosis ELISA	110	5	105
12	PPR competitive ELISA	6	6	0
13	Q-Fever Serum Indirect Multispecies ELISA	169	13	156
14	RBPT Brucellosis	86	-	86
15	Toxoplasmosis Antibody ELISA	169	25	144
	Total Test	2706	154	2552

8.2.3 Status of Brucellosis

The number of serum samples from bovine, caprine, ovine were received for diagnosis of Brucellosis was 614. The distribution of samples by species and number of positive samples of respective species is presented in following figure. These samples were subjected for ELISA test to identify the presence of antibody of Brucellosis. Out of 614 suspected samples 15 (2.44%) were found to be positive for antibody of Brucellosis. The number of samples by district alongwith positive samples of respective district is presented in Figure 22 and 23. The species wise distribution of brucellosis is presented in Figure 24.

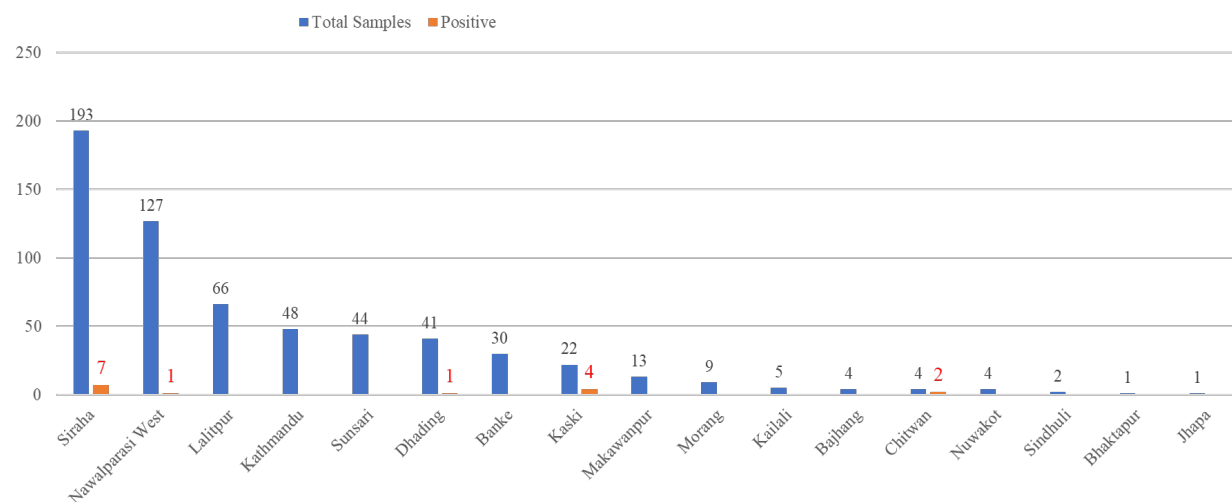


Figure 26: Result of Antibody test for Brucellosis FY 2081/82

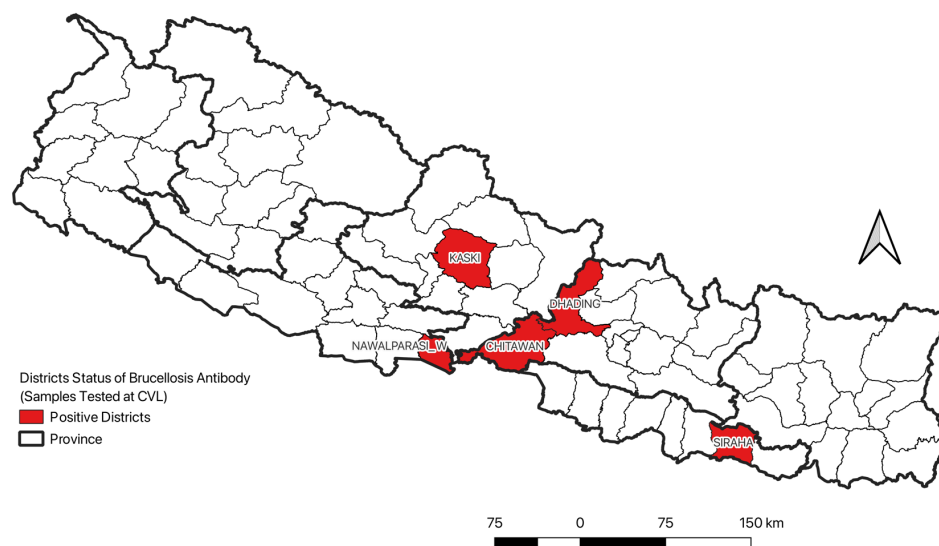


Figure 27: Map of Nepal showing Brucellosis Antibody Positive Districts of FY 2081/82

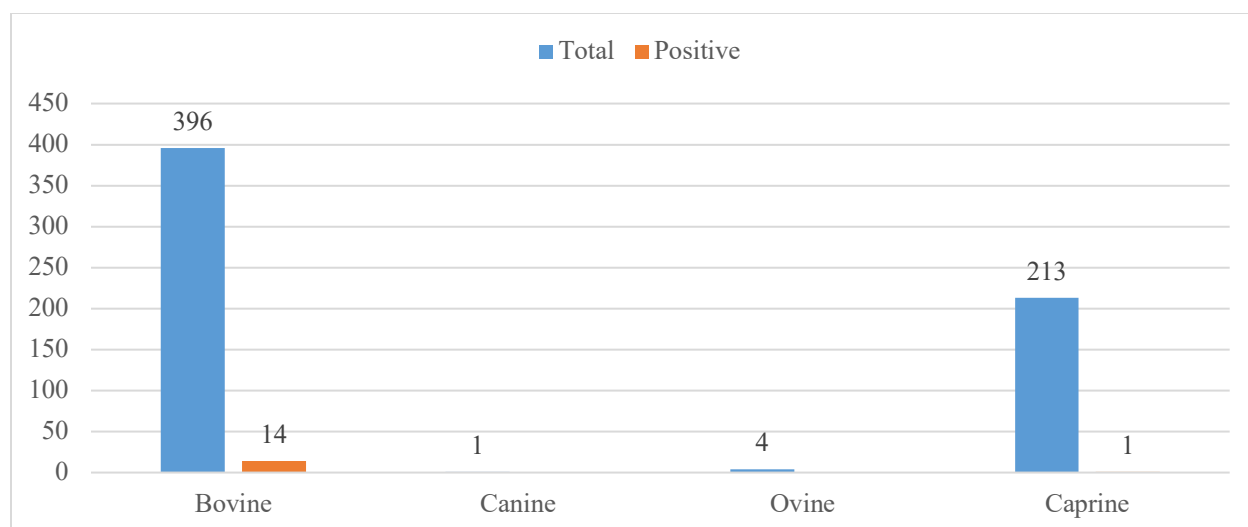


Figure 28: Distribution of seropositive samples of Brucellosis by species of FY 2081/82

8.2.4 Status of Toxoplasmosis

The number of serum samples received for diagnosis of Toxoplasmosis at CVL and VLs was 512. These samples were subjected for ELISA test to identify the presence of antibody of Toxoplasmosis. Out of 512 samples 60 (11.72%) were found to be positive for antibody of Toxoplasmosis. The highest number of positive samples was from Tanahun (22/283) followed by Surkhet (13/60). The number of samples by district alongwith positive samples of respective district is presented in Figure 25 and Figure 27. Highest number of samples from caprine (51/386) were seropositive for Toxoplasmosis. The distribution of seropositive Toxoplasmosis by species is presented in Figure 26.

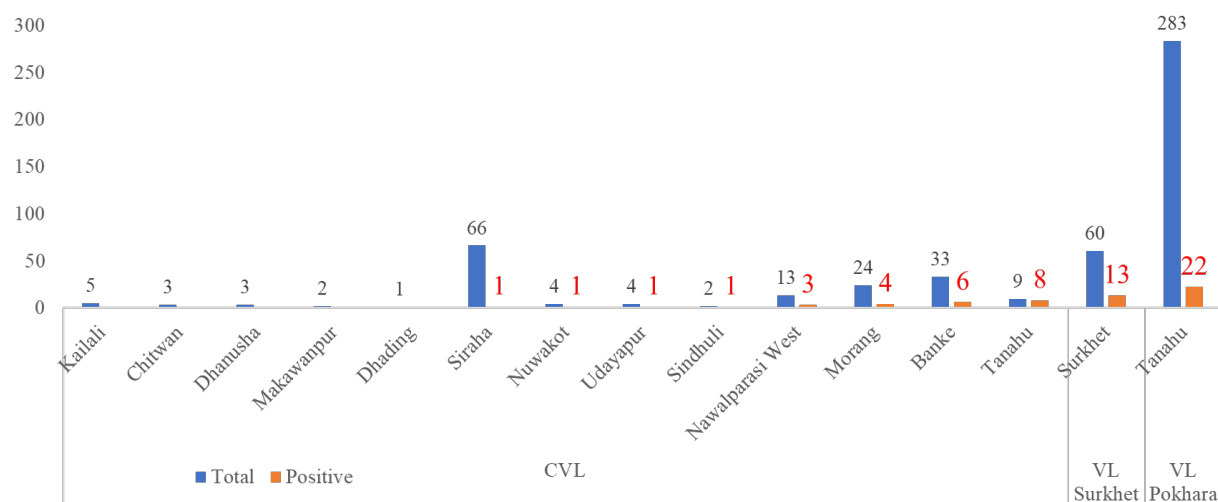


Figure 29: Distribution of seropositive samples of Toxoplasmosis by district in FY 2081/82

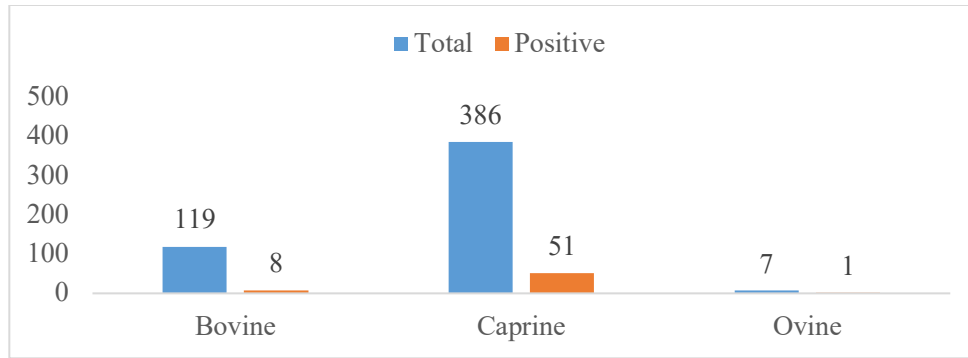


Figure 30: Distribution of seropositive samples of Toxoplasmosis by species in FY 2081/82

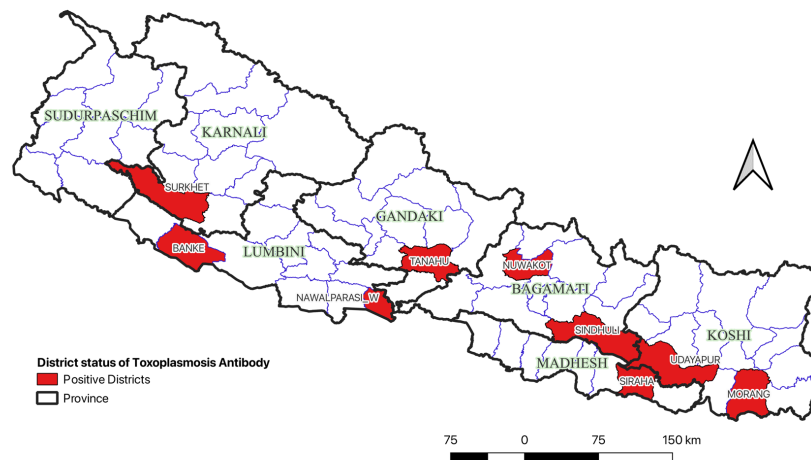


Figure 31: Map of Nepal showing Toxoplasmosis Antibody Positive Districts of FY 2081/82

8.2.5 Status of Q-fever

The number of serum samples received for diagnosis of Q-fever at CVL and VLs was 443. These samples were subjected for ELISA test to identify the presence of antibody of Q-fever. Out of 443 samples 57 (12.87%) from 6 districts were found to be positive for antibody of Q-fever. The number of samples by district alongwith positive samples of respective district is presented in Figure 28 and district with positive samples are presented in Figure 29.

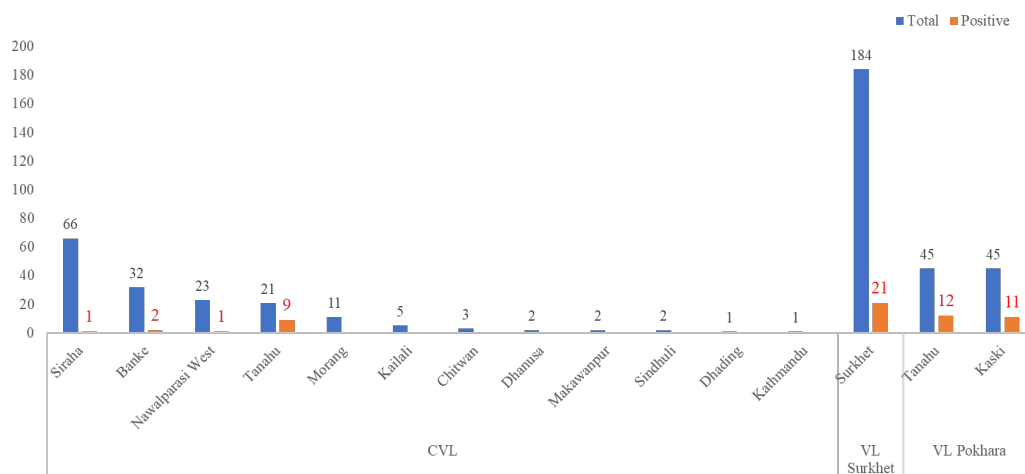


Figure 32: Distribution of seropositive samples of Q-fever by district in FY 2081/82

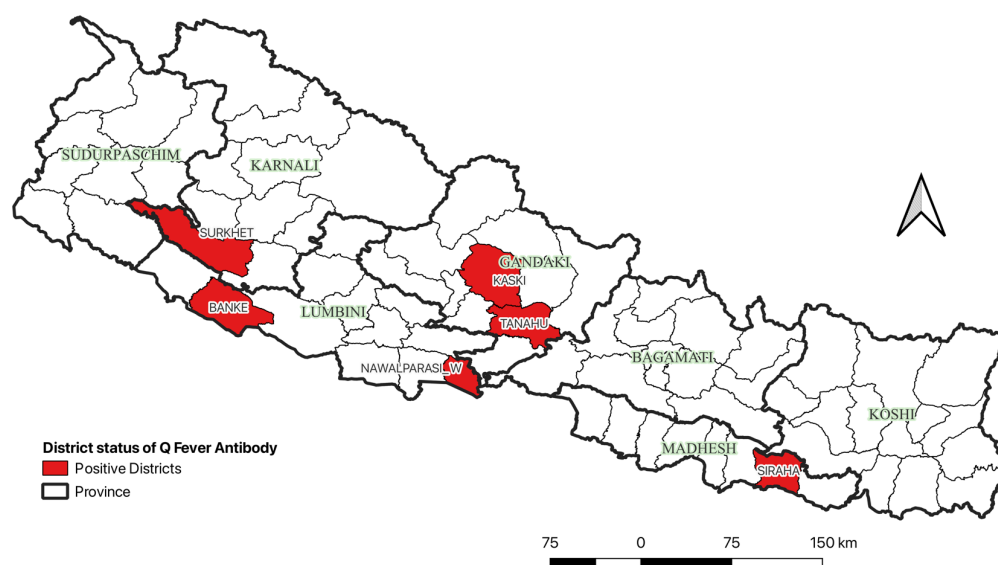


Figure 33: Map of Nepal showing Q-fever Antibody Positive Districts of FY 2081/82

8.2.6 Status of Enterotoxaemia

The number of serum samples received for diagnosis of Enterotoxaemia was 65 from 24 districts. These samples were tested for different toxin for enterotoxaemia from *Clostridium perfringens* toxin detection multiscreen antigen ELISA test. Out of 65 samples 43 (66.15%) were found to be positive for Enterotoxaemia toxins. The highest number of positive samples were from Kathmandu (9/13) followed by Jajarkot (6/6). The number of samples by district along with positive samples of respective district is presented in Figure 30 and districts with positive samples is shown in Figure 31. Similarly temporal distribution of total samples and positive samples shown in Figure 32 and comparison of temporal distribution of FY 2080/81 and FY 2081/82 is shown in Figure 33.

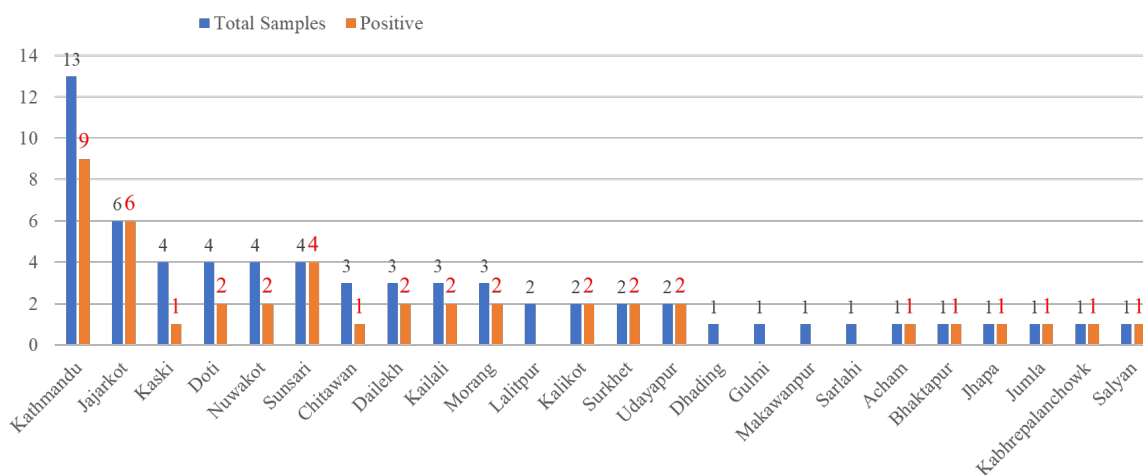


Figure 34: Distribution of Enterotoxaemia by district of FY 2081/82

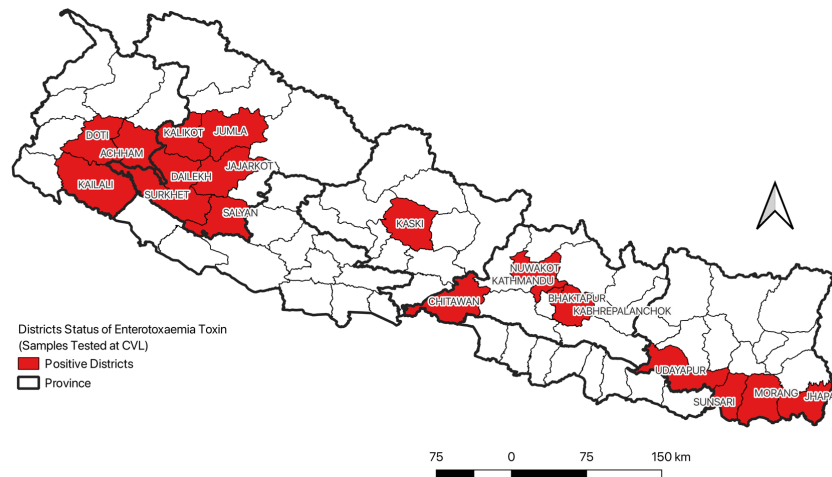


Figure 35: Map of Nepal showing Enterotoxaemia Toxin Positive Districts of FY 2081/82

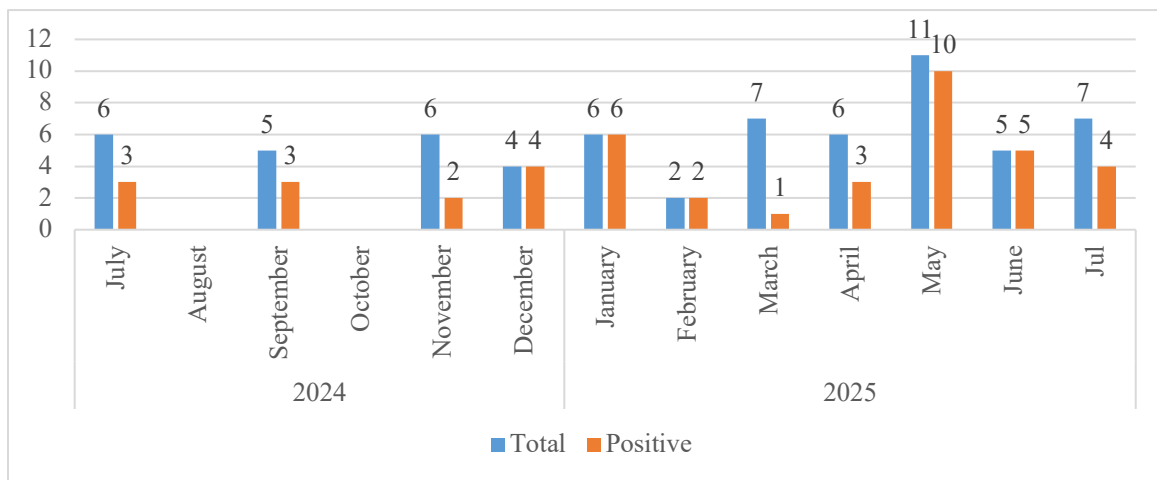


Figure 36: Temporal distribution of Enterotoxaemia suspected samples and positive samples in FY 2081/82

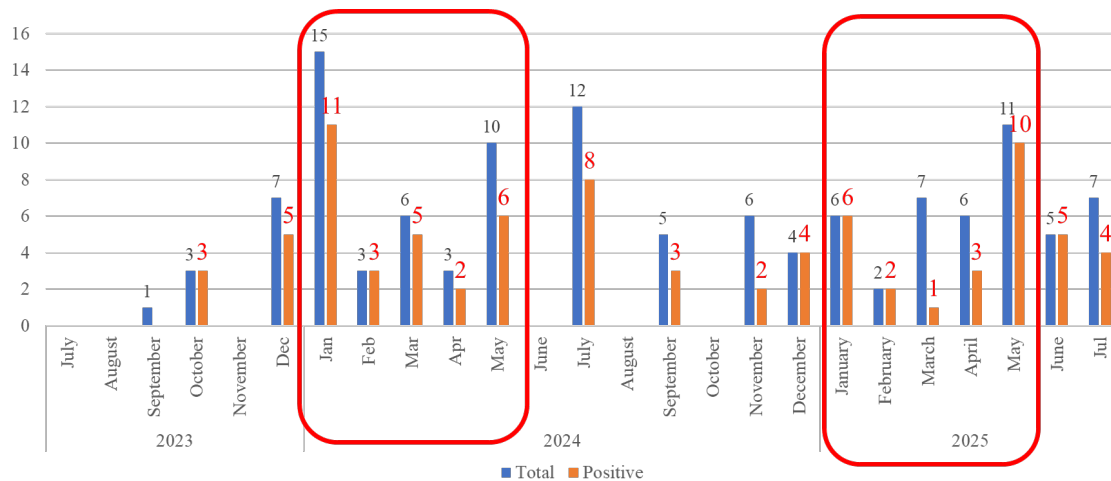


Figure 37: Temporal distribution of Enterotoxaemia suspected samples and positive samples in FY 2080/81 and FY 2081/82

8.2.7 Status of BSE

BSE surveillance in cattle was conducted as per the national BSE surveillance plan. Samples were collected from different parts of the country from cattle showing neurological signs such as limping, lameness etc. As cattle slaughter is prohibited by law in Nepal, collecting samples is very difficult and also as a cow being treated as a holy animal, if found dead is buried deeply. So animals which were insured and found dead and cattle that died in gaushala were targeted for sample collection. The samples were collected from Morang, Jhapa, Sunsari, Nawalparasi, Tanahun, Kaski, Surkhet, Dhangadhi and Kathmandu valley. Altogether 50 samples were collected and tested using PrioSTRIP BSE test kit and all samples were found negative.

9. Veterinary Public Health Section

The Veterinary Public Health Section is responsible for safeguarding public health by ensuring the safety of animal-derived food products. This section implements a range of programs to address public health concerns, including the testing of veterinary drugs, insecticides, and pesticide residues in milk, eggs, meat, and fish. In addition, hormone residue testing is performed on milk and meat to detect substances harmful to human health, including Ractopamine and Progesterone. The section also plays a critical role in zoonotic disease surveillance, focusing on diseases that are prevalent and pose a high risk in Nepal. Furthermore, it oversees the monitoring and regulation of meat shops to ensure compliance with public health standards.

Table 22: Antibiotic residue in meat and fish and hormone residue in swine muscle and tongue

Test	Test method	Sample Type	Positive	Negative	Total
Florfenicol	ELISA	Meat	0	80	80
Malachite Green	ELISA	Fish	0	32	32
Progesterone	ELISA	Swine Muscle & Tongue	0	160	160
Tetracycline	ELISA	Fish	4	84	88
Tetracycline	ELISA	Meat	11	162	173
Tylosin	ELISA	Meat	5	306	311
Total Test					844

Table 23: Zoonotic Diseases test in different samples of domestic animals

Test	Test Method	Sample Type	Positive	Negative	Total
Brucellosis	ELISA	Milk	28	538	566
Brucellosis	RBPT	Serum	23	4545	4568
CCHF	ELISA	Serum	4	388	392
Chlamydia	ELISA	Serum	1	91	92
Leishmaniasis	ELISA	Serum	7	85	92
Leptospirosis	ELISA	Serum	16	176	192
Q fever	ELISA	Milk	4	110	114
Q fever	ELISA	Serum	59	264	323
Toxoplasmosis	ELISA	Serum	106	309	415
Trichinella	ELISA	Muscle & Tongue	23	161	184
Total Test					6938

Analysis of milk samples for brucellosis antibodies revealed the highest proportional seropositivity in Kailali at 12.0% (11/92). Dang and Nawalpur recorded the next highest rates at 9.8% (5/51) and 9.4% (5/53), respectively. Lower seropositivity was detected in Chitwan (6.6%), Nuwakot (1.9%), and Bara (1.1%). In contrast, samples from Dhading, Makwanpur, and Baglung yielded entirely negative results.

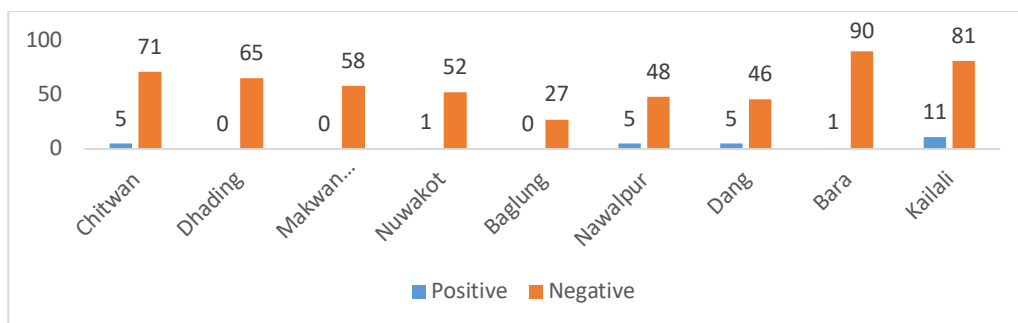


Figure 38: District wise distribution of Brucellosis antibody in milk samples of different species

Overall, seropositivity rates are very low across all districts. Syanja recorded the highest proportion at 4.0% (2/50), followed by Chitwan at 2.3% (13/575). Dolakha and Bara also exhibited low but notable rates of 1.1% each, while Tanahu recorded 0.6% (3/501). Most districts recorded no positive serum samples, highlighting that brucellosis antibody detection in serum is generally rare across the tested regions.

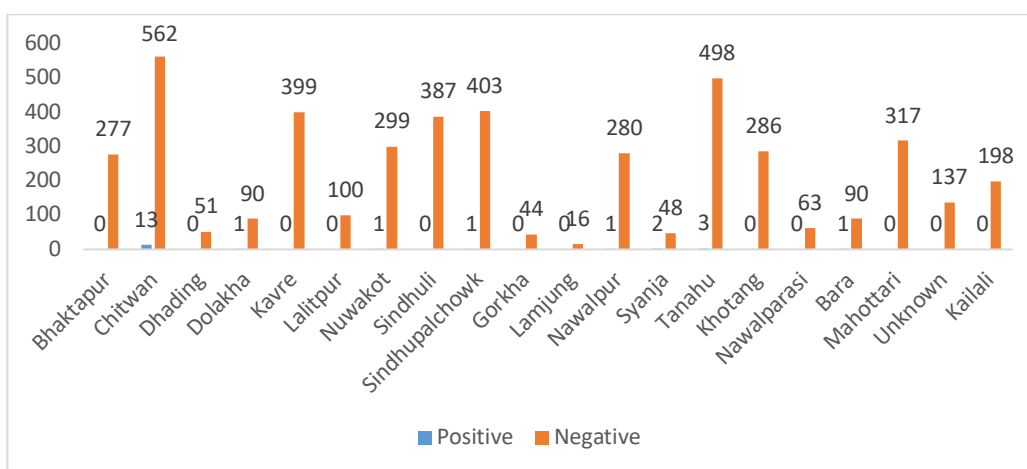


Figure 39: District-wise distribution of brucellosis antibody seropositivity

Leptospirosis antibody seropositivity was detected at varying levels across districts, with the highest rate in Lamjung (37.5%), followed by Nawalpur (8.8%) and Syanja (4.0%), while Gorkha showed no positives. This indicates localized variation in exposure risk.

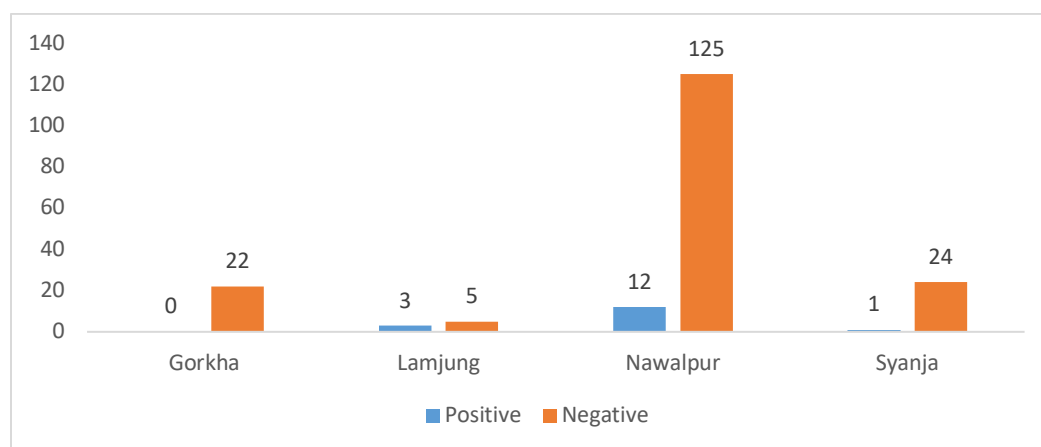


Figure 40: District-wise distribution of leptospirosis antibody seropositivity in serum samples

Testing of milk and serum samples from cattle, goats, and buffalo across several districts revealed marked variation in Q fever antibody prevalence. The highest seropositivity was observed in Kailali, with 39 positives out of 50 samples (78.0%). Moderate prevalence was noted in Dhading (30.8%, 8/26) and Lamjung (25.0%, 2/8). Lower seropositivity rates were detected in Nawalpur (5.8%, 8/137), Banke (3.5%, 4/114), and Nawalparasi (3.2%, 2/63). In contrast, samples from Syangja (0/25) and Gorkha (0/14) recorded no detectable positives.

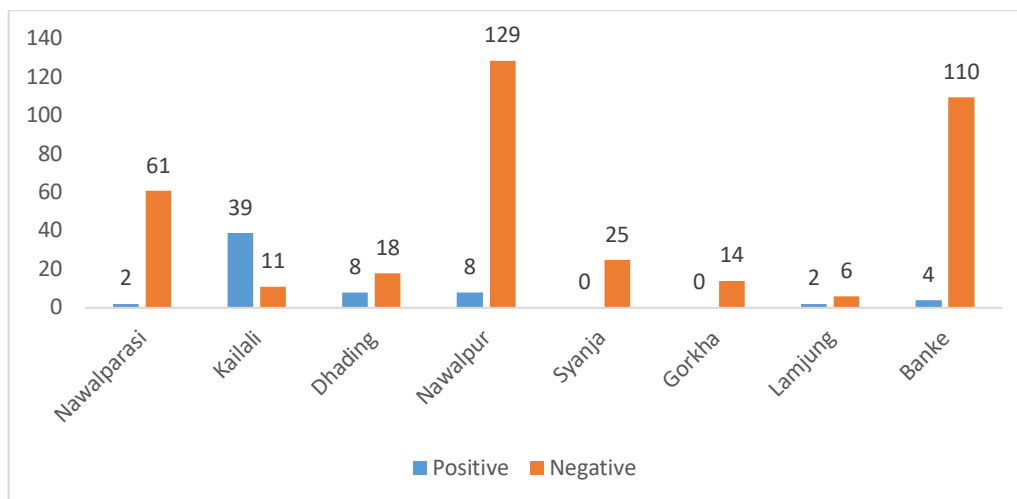


Figure 41: District wise distribution of Q fever antibody in serum and milk samples

A serological evaluation of 175 cattle serum samples for anti-rabies antibody titers revealed an overall seroconversion rate of 31.4%, indicating a relatively low development of protective antibodies following vaccination. Notable regional variations were observed; Lamjung exhibited the highest seroconversion rate at 44.2%, while samples from Sindhuli showed no detectable protective titers.

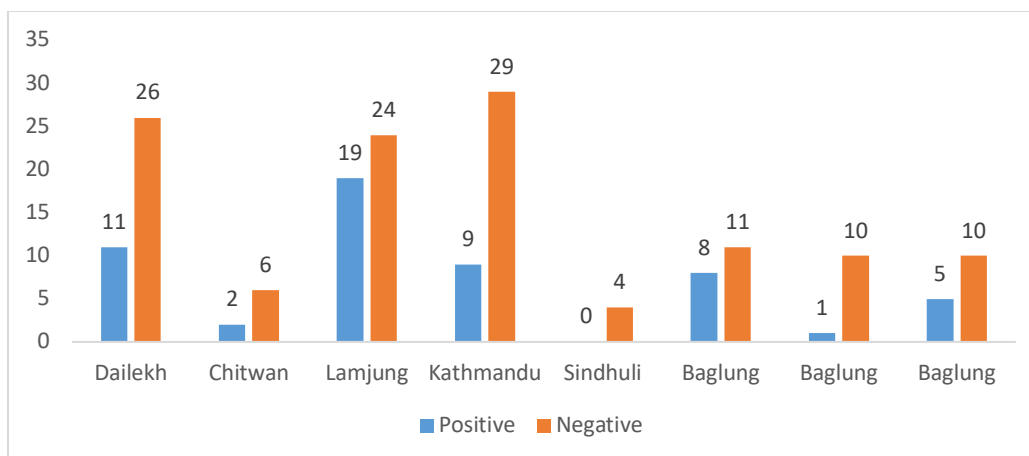


Figure 42: District wise distribution of rabies antibody titer in serum samples cattle

Serum samples tested for toxoplasmosis antibodies revealed the highest seropositivity in Kailali (50.0%), followed closely by Nawalparasi (45.2%) and Dhading (30.8%). Syangja (12.0%) and Nawalpur (2.9%) exhibited a much lower prevalence. In contrast, Gorkha and Lamjung showed no detectable positives

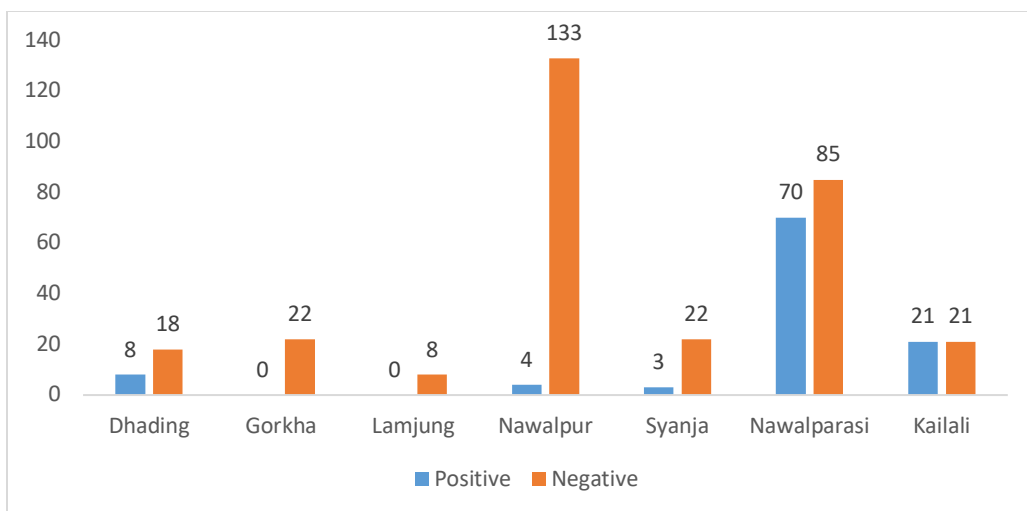


Figure 43: District wise distribution of toxoplasmosis antibody in serum samples

Veterinary Laboratory

1. Introduction

To provide diagnostic facilities throughout the country, CVL works through its five Veterinary Laboratories (VLs) located in different provinces of the nation; Veterinary Laboratory, Biratnagar Janakpur, Pokhara, Surkhet and Dhangadhi. Specimens that cannot be processed in the aforementioned laboratories due to insufficient facilities and expertise or needed to be further tested for confirmation are referred to the CVL.

2. Objectives

The objectives of veterinary laboratories as follows;

- To provide prompt and efficient disease diagnostic services to the farmers of respective province/working areas.
- To investigate and diagnose the epidemics in the province.
- To assist and support VHLESC and local level governments for sample collection, disease diagnosis and epidemic control.
- To supervise and assist in diagnostic services to basic and primary laboratories situated in VHLESC in the province.
- To collect, analyze and predict the animal diseases prevailing in the province.
- To develop human resources for the field level veterinary services.
- To coordinate and support national livestock disease control and eradication program.
- To support and facilitate the national veterinary regulatory services.
- To participate actively in collaborative and coordinated research program in animal health and production in the region.

3. Laboratory Services at VL

To meet the above-mentioned objectives, the veterinary laboratories has been providing services under four sections.

3.1 Pathology section

Post-mortem examination, hematology and biochemistry are the major areas under the pathology section. Mostly the section receives specimens from all over the province either directly or through the respective VHLESC or local level government. Besides this, veterinary practitioners, livestock and poultry farms as well as farmers deliver specimens for the purpose of disease diagnosis.

3.2 Microbiology section

This section is responsible for isolation and identification of bacteria and fungus, which receives samples from various sources such as farmers, local level governments, referral samples from private clinics, VHLESC and directly from the field during the outbreaks. Various samples like milk, urine, tissues, water, nasal swabs, ear swabs and skin scrapping are received in this unit for isolation, identification and antibiotic sensitivity testing of the organism. Also, this section is responsible for the diagnosis of viral disease through different tests. Lateral flow assay (antigen based) is used for the initial diagnosis of New Castle Disease, Disease, Avian Influenza, Infectious Bronchitis, African Swine Fever and Rabies. For the further confirmative diagnosis of disease, the samples are sent to the CVL.

3.3 Molecular biology/Serology section

Molecular tools are increasingly important in modern animal disease investigation. Molecular biology section is functioning in some labs and are planning to make functional in other labs facilities for handling infectious agents. This section also the facility for ELISA and other serological tests. Most of the samples are submitted to this unit by the post mortem unit and field level for the further confirmative diagnosis of disease, the samples are sent to CVL.

3.4 Administration Section

This section governs overall financial, logistic and administrative management of the laboratory. The section is responsible for revenue collection, maintenance of reagents and supplies, financial transaction, vehicle management etc.

4. Organizational structure

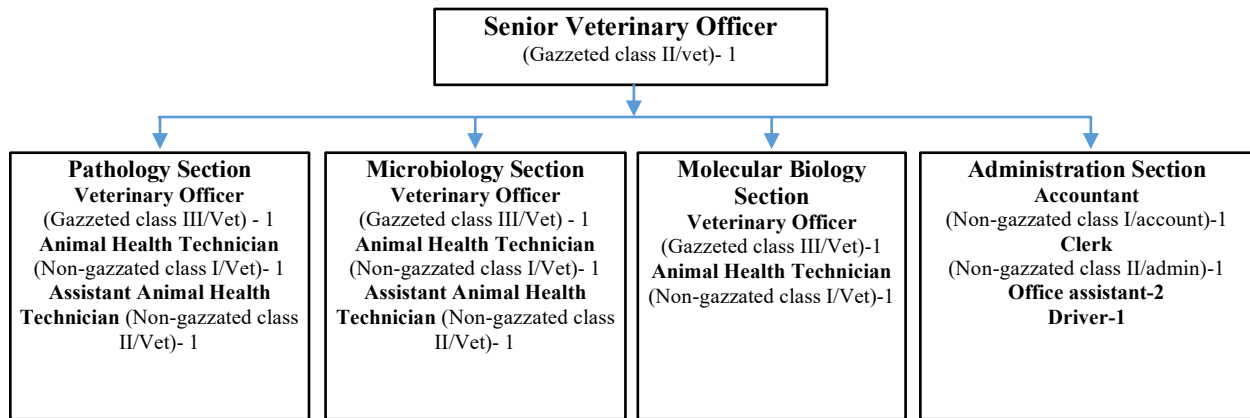


Figure 1: Organizational structure of VL

Veterinary Laboratory Biratnagar

1. Introduction

Veterinary Laboratory Biratnagar, formerly known as Regional Veterinary Laboratory, is located in Biratnagar Metropolitan City in Koshi Province. It was established in F.Y.1988/1989. This laboratory was restructured during 2074/75 with the scope to work in all 14 districts of Koshi Province. In Veterinary Laboratory, Biratnagar, the following diagnostic services are available: fecal test, blood test, skin scraping test, postmortem examination, bacterial culture, etc.

2. Human Resources

Table 1: Staffing of Veterinary Laboratory, Biratnagar, Morang

S.N.	Name of person	Designation
1.	Dr. Kamal Giri	Senior veterinary officer
2.	Dr. Suleshwor Mandal	Veterinary Officer
3.	Dr. Anit Ghimire	Veterinary officer
4.	Dr. Roseeka Shrestha	Veterinary Officer
5.	Yogendra Bahadur Thoknel	Accountant
6.	Babita Rai	Animal health technician
7.	Yograj Budathoki	Animal health technician
8.	Bikash Adhikari	Assistant Animal Health Technician
9.	Jagdish Rajbansi	Kharidar
10.	Sanjay Kumar Singh	Assistant Animal Health Technician
11.	Ram sewak Mandal	Office Assistant
12.	Jay Narayan Kumar Yadav	Driver
13.	Pappu Yadav	Office Assistant

3. Laboratory services

3.1 Parasitological Examination

The parasitology unit examines the faecal samples of various livestock species by direct smear, sedimentation and flotation methods. Parasitological unit identifies the parasites and quantifies the parasitic burden of the nematodes, trematodes and cestodes by Mc-Master method.

In this fiscal year 2081/82, a total of 165 fecal samples were collected from Jhapa and Morang district. Fecal samples collected from cattle, buffalo and goats were examined and were found to be positive for various parasite species. Internal parasites like *Strongylus*, *Fasciola*, *Paramphistomum*, *Trichuris* and *Hemonchus*, etc., were the major internal parasites identified. The result of the fecal examination is presented in the table and figure below.

Table 2: Results of fecal examination (Species-wise and District-wise)

District	Species			Total sample	Positive	Negative	Positive %
	Cattle	Buffalo	Goat				
Jhapa	0	0	26	26	10	16	38.46%
Morang	45	2	126	173	85	88	49.13
Total	45	2	152	199	95	104	47.73

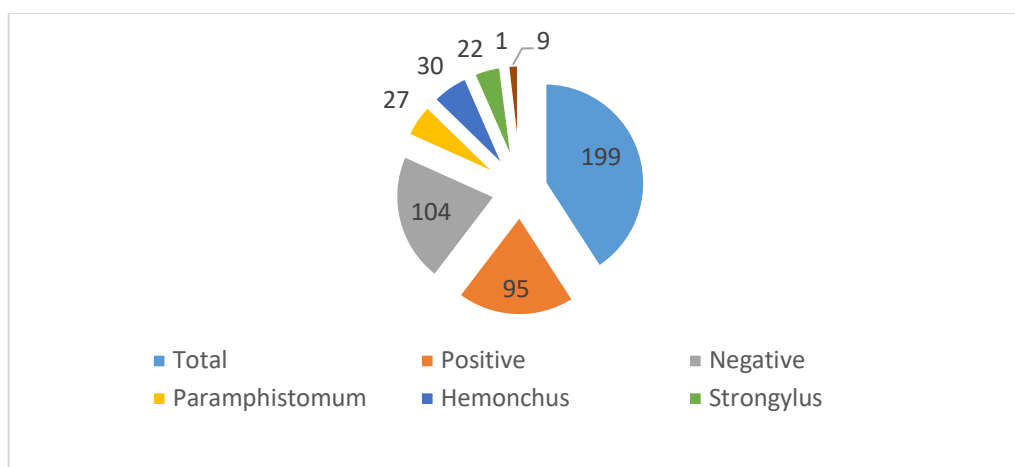


Figure 1: F/Y 81/82 helminth parasite incidence

3.2 Clinical hematological Test:

The hematological unit examines blood samples from different animal species. Hematological tests including routine blood profile (Hb, PCV, DLC, ERS, PLT) and examination for blood parasites are performed. A total of 1583 blood samples were tested for routine examination in this fiscal year, and 324 samples were screened for blood parasites. Out of 324 samples examined for hemo-protozoans, 51 samples were positive for different blood parasites. Blood protozoa species, including Trypanosoma sps., Babesia sps, Anaplasma sps., and Theileria sps., were detected in positive samples. The result of the blood examination is presented below:

Table 3: Species-wise hematological details at VL, Biratnagar (F/Y. 2079/80,2080/81 & 2081/82)

F/Y	Total cases	Cattle	Buffalo	Dog	Goat	Swine	Cat
2079/80	480	402	35	38	5	0	0
2080/81	812	295	14	494	5	4	0
2081/82	1583	442	69	945	88	10	19

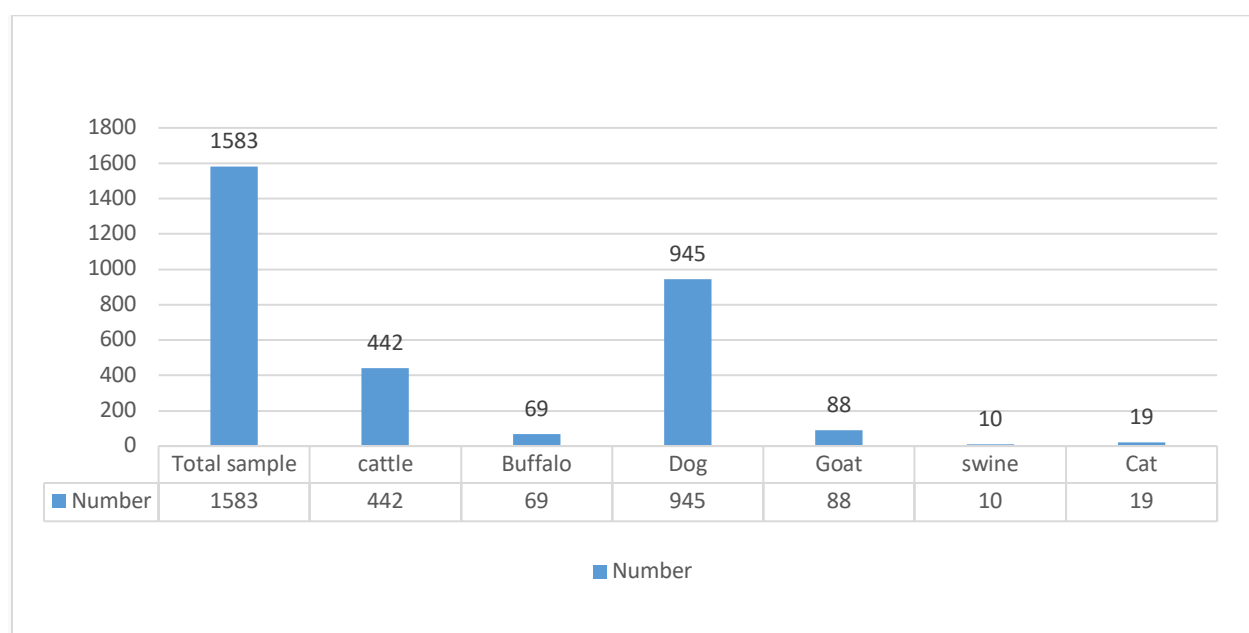


Figure 2: Species-wise hematological details of F/Y 2081/82

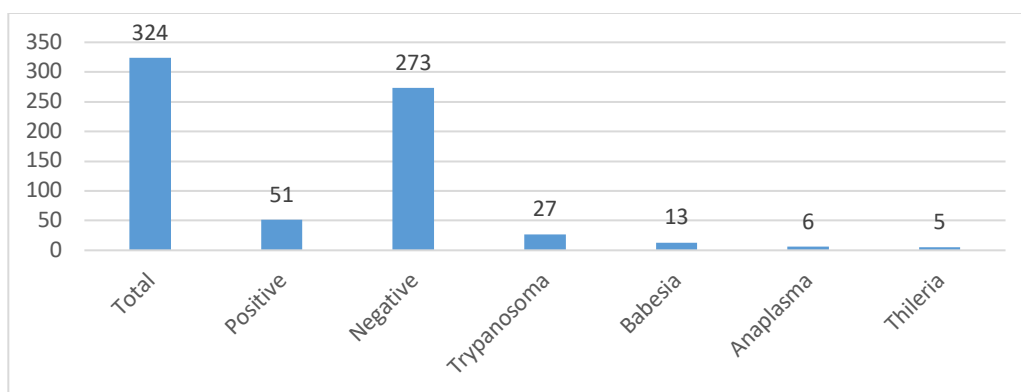


Figure 3: Blood protozoa identified in F/Y 2081/82

3.3 Skin scraping examination:

In F/Y 2081/82, a total of 67 skin samples were examined for parasite, among which 25 samples were positive. The result of the skin scraping examination is presented below:

Table 4: Skin scraping examination results at VL, Biratnagar (F.Y. 2081/82)

Species	Total sample	Positive		Negative
		Demodex	Sarcoptes	
Dog	54	16	5	33
Cat	5	1	1	3
Goat	6	2	0	4
Cattle	2	0	0	2
Total	67	19	6	42

3.4 Urine test:

During this fiscal year, a total of 41 urine samples were tested, out of which 7 samples were found abnormal with trace blood (5), increased urobilinogen (1) and pus (1).

3.5 California Mastitis Test (CMT):

A total of 678 milk samples were tested for the detection of subclinical mastitis using CMT, out of which 483 were found positive. Positive milk samples brought in aseptic condition were forwarded for the bacterial culture, identification, and AST.

4. Microbiological Examination:

The Microbiology unit conducts bacterial culture for bacterial identification and antibiotic sensitivity test. Samples like milk, blood, pus, skin scraping and tissue are routinely processed for bacteriological work. In this fiscal year, out of 452 culture samples, 226 were milk, and 36 were blood and tissue. The result of the microbiological examination is presented below.

Table 5: Microbiological examination result (F.Y. 2081/82)

Sample type	Total Sample	No growth	Growth	Gram-Positive Bacteria	Gram-negative Bacteria
Milk	269	30	239	190	49
Poultry (Liver, Intestine and Kidney swab)	135	77	58	9	49
Blood	5	4	1	1	0
Wound and pus	14	3	11	6	5
Skin scraping	29	11	18	6	12
Total	452	125	327	212	115

Table 6: Major bacterial isolates in different species (F.Y. 2081/82)

Bacteria	Bovine	Poultry	Dog	Total
<i>Escherichia coli</i>	27	35	1	63
<i>Staphylococcus</i> spp.	127	4	8	139
<i>Citrobacter</i>	6	3	0	9
<i>Pseudomonas</i> spp.	1	2	2	5
<i>Klebsiella</i> spp.	19	5	0	24
<i>Streptococcus</i> spp.	7	0	0	7
<i>Salmonella</i>	0	1	0	1
<i>Proteus</i>	0	1	4	5
No growth	53	8	5	66
Candida Fungi	0	0	8	8

4.1 Antibiotic sensitivity test:

Samples with bacterial growth were subjected for AST. AST result for different sample types based on isolates found is presented in the figure below.

Antimicrobial Susceptibility of *Staphylococcus* spp. isolated from milk samples (FY 81/82)

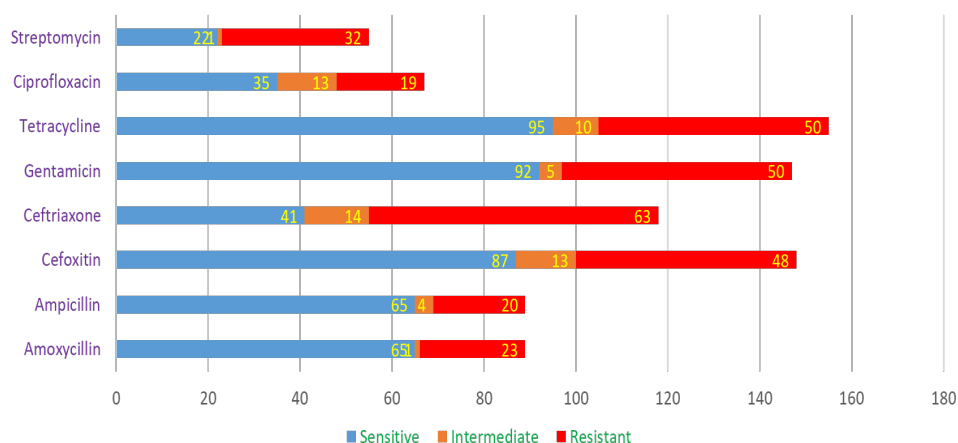


Figure 4: AST pattern against *Staphylococcus* spp. isolated from milk

Antimicrobial Susceptibility of *Escherichia coli* isolated from poultry samples (FY 81/82)

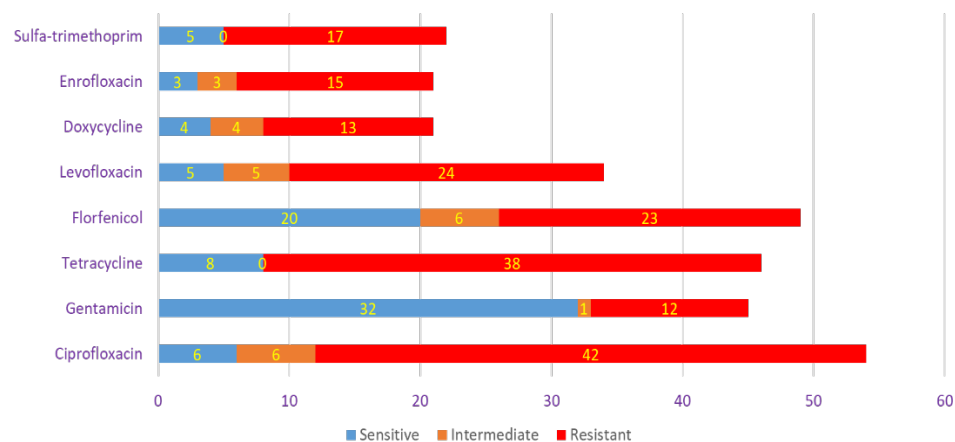


Figure 5: AST pattern against *E. coli* isolates from poultry

5. Active surveillance in commercial Broiler farms at Morang

On the financial support of VHLESC, Morang, VL Biratnagar conducted active surveillance of 30 commercial broiler poultry farms in three local levels of Morang district. 59 Cloacal and environmental samples were collected and cultured for bacteria identification and AST. The results of surveillance is presented in the table and Graph below:

Table 7: Total number of sample collections from different local levels for active surveillance

Local level name	No of farm surveillance	No of sample collection	
		Cloacal swab	Environmental swab
Katahari	8	32	8
Dhanpal	10	40	10
Rangeli	12	48	12
Total	30	120	30

Table 8: Bacterial isolates in Active surveillance in F/Y 2081/82

Total Sample culture	Salmonella	Citrobacter	Shigella	E. coli	Proteus	Unidentified/Unknown
59	4	3	1	1	2	48

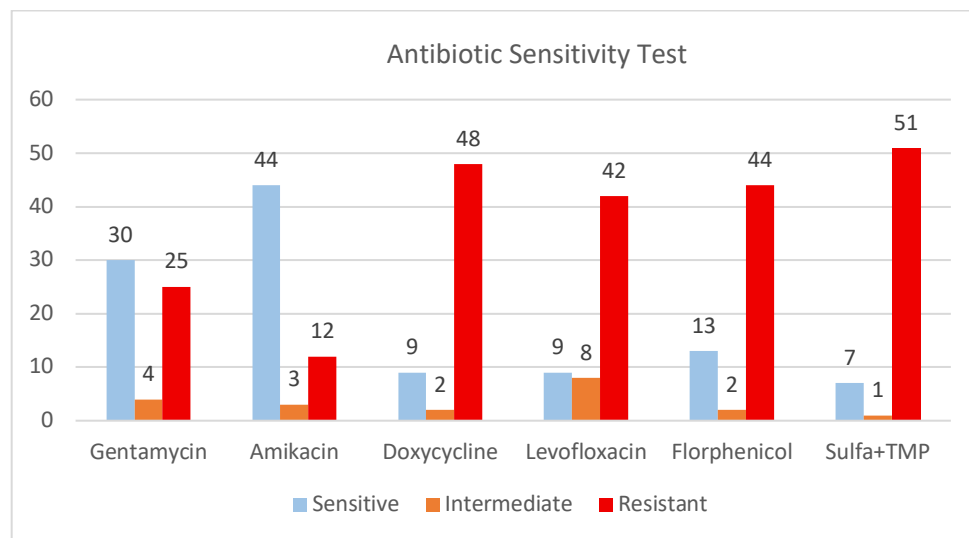


Figure 6: AST patterns in Active surveillance

6. Serological Examination:

Serological unit conducts different types of tests like PAT, Rapid Kit, Biochemical Test and ELISA. Details of the tests are shown in the table below:

1	PAT	Salmonella, Mycoplasma, RBPT
2	LFA	Brucellosis, E. canis, etc
3	Biochemical test	Calcium, phosphorus, protein, glucose, Iron, creatinine, magnesium, urea, SGPT, SGOP etc

Table 9: PAT Results

Name of Test	Annual Target	Total Sample	Results	
			Positive	Negative
RBPT	100	169	8	161
Salmonella	50	53	13	40
Mycoplasma	50	50	20	30
Total	200	272	41	231

7. Virological Examination:

The virological unit performs tests for various viral disease LFA and ELISA. List of the virological tests conducted by VL, Biratnagar includes:

- Bovine Disease: - FMD, PPR, Rabies, Rotavirus, BVD, etc.
- Canine Disease: - Rabies, Canine distemper, Canine parvo, canine corona, etc.
- Porcine Disease: - ASF, CSF, PRRS etc.
- Avian Disease: - ND, IBD, IBV, AIV, etc.

Table 10: Virological cases (outbreak cases)

Disease	Total sample	Type of sample	Positive	District having Positive sample
PPR (Ag)	136	Nasal/Ocular swab	37	Morang, Sunsari
ASF	36	Blood/ Plasma	11	Morang, Sunsari, Jhapa
CSF	41	Blood/ Plasma	3	Morang, Sunsari, Jhapa
Rabies	69	Brain Tissue	40	Morang, Sunsari, Jhapa, Ilam, Panchthar, Taplejung
Canine Distemper	109	Ocular swab	63	Morang, Sunsari, Jhapa
Canine Parvo	63	Fecal swab	24	Morang, Sunsari, Jhapa
Avian Influenza	569	Tracheal swab	14	Morang, Sunsari, Jhapa
ND	200	Tracheal swab	29	Morang, sunsari, Jhapa
IBDV	203	Tracheal swab	167	Morang, sunsari, Jhapa, udaypur

8. Bovine Spongiform Encephalopathy (BSE)

VL Biratnagar collected brain tissue sample from Ilam, Sunsari and Morang for BSE diagnosis. 5 samples (2 from Sunsari and Morang, respectively and 1 from Ilam) were sent to CVL for diagnosis, and all sample submitted were tested negative for BSE.

9. Pathological Examination:

Pathological units include the post-mortem examination of animals and birds. Most of the cases brought for post-mortem in the lab were poultry followed by goat and pigs. Out of 1444 autopsy samples, 1427 were of poultry, 9 goats and 8 pigs. Autopsy cases were brought from Sunsari, Morang, Jhapa, Dhankuta, Saptari and Udayapur districts.

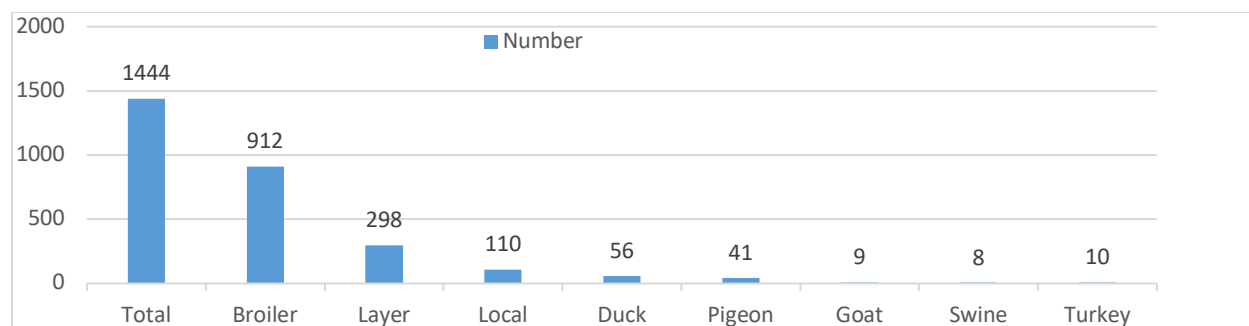


Figure 7: Post-mortem progress report of F/Y 2081/82

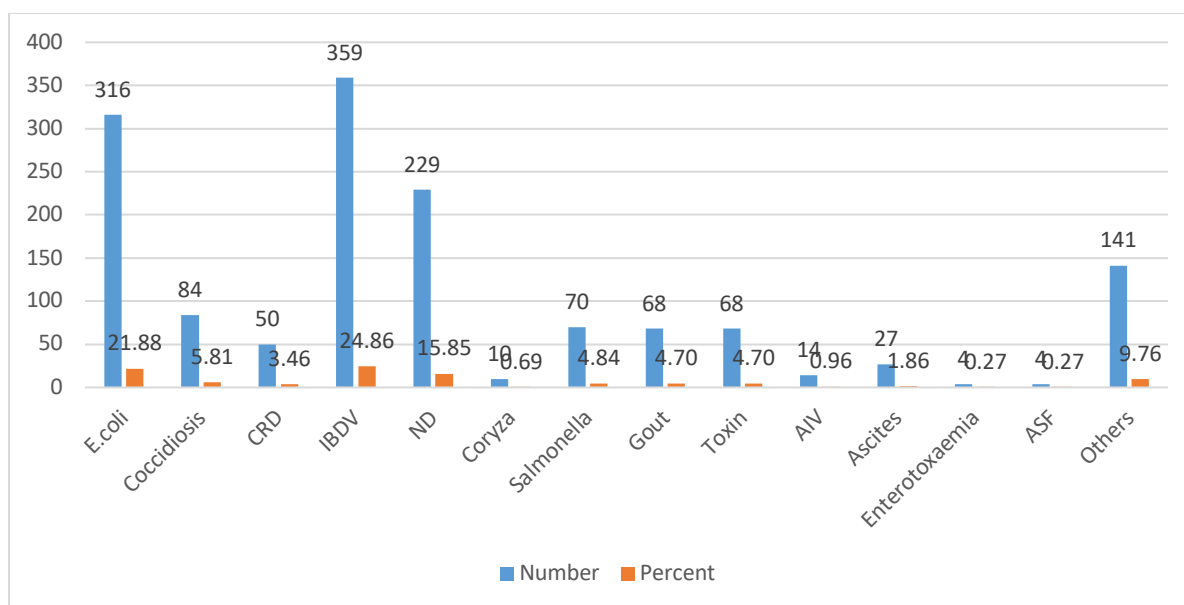


Figure 8: Diseases pattern in different species based on PM findings

10. Sero-monitoring:

Sero-monitoring was conducted as a part of national disease control program to evaluate the efficacy of vaccination program. Immune response (antibody titer) of an individual against the vaccine was monitored after 21 days of vaccination. Serum samples were collected and tested.

In this fiscal year, samples for seromonitoring were collected as per the standard sampling plan. For sampling samples were collected from different districts and palikas. From each district not less than 3 palikas were selected randomly and at least 3 wards were taken from each palika. Likewise, a total of 2000 serum samples from different district of the Koshi province was collected for this purpose. Out of total sample collected, 994 were for FMD seromonitoring, 1017 for PPRseromonitoring and 79 for CSF seromonitoring respectively. Efficacy of vaccine shown in table and figure below.

Table 11: Sample collection details for seromonitoring at VL, Biratnagar

District	No of serum sample collections for FMD	No of serum sample collections for PPR	No of serum sample collections for CSF	Remarks
Morang	96	81	35	212
Sunsari	137	84		221
Jhapa	127	80	33	240
Dhankuta	106	81		187
Panchthar	61	71		132
Khotang	54	54		102
Ilam	55	99		154
Udaypur	80	112		192
Okhaldhunga	62	102		164
Bhojpur	0	100		100
Sankhuwasabha	204	153	11	368
Taplejung	12	0		12
Total	994	1017	79	2090

11. FMD seromonitoring:

FMDV Type o, Ab ELISA Test Report from
FMD & TADs Investigation Laboratory, Kathmandu

Table 12: Serosurveillance results of FMD Type O at VL, Biratnagar (F.Y. 2081/82)

District	Total sample	Positive	Negative	Positive (%)	Negative (%)	Remarks
Ilam	55	51	4	92.7	7.3	Chulachuli
Jhapa	127	118	9	92.9	7.1	
Morang	96	57	39	59.4	40.6	
Sunsari	137	115	22	83.9	16.1	
Total	415	341	74	82.16	17.14	

FMDV Type A & Asia1 Ab ELISA Test Report from
FMD & TADs Investigation Laboratory, Kathmandu

Table 13: Serosurveillance results of FMD Type A & Asia 1

District	Type A				Type Asia 1			
	Total sample	Total Positive	Positive %	Total Negative	Total sample	Total Positive	Positive %	Total negative
Ilam	55	52	94.55	3	55	39	70.91	16
Jhapa	127	101	79.53	26	127	70	55.12	52
Morang	96	42	43.75	54	96	33	34.38	63
Sunsari	137	101	73.72	36	137	85	62.04	52
Total	415	296	71.73	119	415	227	54.70	188

12. CSF seromonitoring

CSF Ab ELISA Results

Table 14: Serosurveillance results of CSF

District	No. of sample	Positive	Positive %	Negative	Negative %
Morang	35	29	83	6	17
Jhapa	33	29	88	4	12
Sankhuwasabha	11	0	0	11	100
Total	79	58	73	21	27

13. PPR seromonitoring

PPR Ab ELISA Results

Table 15: Serosurveillance results of PPR

District	Total sample	Positive	Negative	Positive (%)	Negative (%)	Remarks
Jhapa	80	78	2	97.5	2.5	
Morang	81	49	32	60.49	39.51	
Sunsari	84	79	4	94.05	4.76	Doubtful-1 (1.19%)
Udaypur	112	106	06	94.64	5.36	
Panchthar	71	57	14	80.28	19.72	
Bhojpur	100	81	18	81.0	18	Doubtful-1 (1.0%)
Dhankutta	81	62	18	76.54	22.22	Doubtful-1 (1.23%)
Okhaldhunga	102	79	21	77.45	20.59	Doubtful-2 (1.96%)
Ilam	99	89	7	89.90	7.07	Doubtful-3 (3.03%)
Sankhuwasabha	153	52	101	33.99	66.01	
Khotang	54	37	15	68.52	27.78	Doubtful-2 (3.70%)
Total	1017	769	238	77.66	21.22	Doubtful -10 (0.90%)

14. Vaccine Bank Management:

Department of Livestock Services (DLS) has been distributing vaccines for use in animals under National Animal Disease Control Program. In this fiscal year, under the national animal disease control program, vaccine distribution to all districts were performed and the vaccines for outbreak management was stored in cold chain system at VL Biratnagar. Also, vaccine procured by provincial government was also stored and managed by VL Biratnagar. Vaccine distributed included FMD, LSD, PPR, CSF, RD, and HS&BQ.

Table 16: Vaccine distribution for National Disease Control Programme (F.Y. 2081/82)

District	FMD	HS & BQ	LSD	PPR	CSF	Rabies
Morang	339800	13600	72250	408000	101000	1720
Sunsari	17300	18000	52000	276000	20000	870
Ilam	157000	10000	52000	108000	14100	750
Panchthar	65000	0	12000	73000	22200	900
Okhaldhunga	68000	1000	6000	130000	12000	0
Dhankutta	43800	0	15000	125000	17800	0
Udyapur	38000	20000	21000	275700	20000	590
Sankhuwasabha	38000	7000	9000	134000	42900	0
Jhapa	294000	0	98900	379700	70000	2250
Taplejung	33500	0	6000	65500	13800	200
Terahthum	20000	3750	3000	88000	5000	0
Bhojpur	36000	0	9000	80000	20000	0
Khotang	34000	20000	6000	135500	30600	200
Solukhumbu	32000	0	6000	50000	10000	0
Dolfd, Biratnagar						2000
Siraha (Lahan)	0	0	75	0	0	0
Total	1144400	93350	368225	2328400	399400	9480

15. Vaccine Stock details

Table 17: Vaccine stock details in vaccine bank at VL Biratnagar

Name of Vaccine	Receive vaccine from DLS	Distribution of vaccine	Stock in vaccine bank	Mfd. date	Exp. Date	Remarks
PPR	2709400	2328400	381000	Feb 2024	Jan 2026	2 yr.
CSF	644580	399400	245180	Dec 2024	May2026	18 Month
H.S. & B.Q.	128000	93350	34650	Oct 2024	March 2026	18 Month
Rabies	10500	9480	1020	21-03-2025	20-03-2026	1 yr.
FMD	DLS: 1490600 Dolfd: 581400 Total: 1991000	1144500	0			846500 डोज खोप निर्देशनालय लाई हस्तारनतरण भैसकेको।
LSD	122000	74000	48000	Feb 2025	Jan 2027	2 yrs.

Veterinary Laboratory Janakpur

1. Introduction

Veterinary Laboratory is situated in Janakpurdham city of Madhesh province. The laboratory is providing diagnostic services to eight districts of Madhesh Pradesh and also to the adjoining districts of Bagmati province. The working areas of this laboratory is mainly focused on surrounding districts: Dhanusha, Mahottari, Sarlahi, Rautahat, Bara, Parsa, Siraha, Saptari, and Sinduli. The laboratory has various units viz pathology, parasitology, microbiology, hematology, biochemistry, sterilization and serology. Histopathological and molecular laboratory test results are obtained by dispatching the relevant specimens to CVL, as these diagnostic facilities are not functional in Veterinary Laboratory, Janakpur at present.

2. Human resources

Table 1: Staffing of Veterinary Laboratory, Jankpur, Dhanusha

S.N.	Name of staff	Position
1.	Dr. Umesh Prasad Sah	Senior Veterinary Officer
2.	Mr. Rakesh Kumar Sah	Veterinary Officer
3.	Dr. Aayusha Ghimire	Veterinary Officer
4.	Mr. Laxmi Mandal	Animal Health Technician
5.	Mr. Ravindra Yadav	Animal Health Technician
6.	Mr. Kamal Prasad Baral	Animal Health Technician
7.	Mr. Ashok Prasad Yadav	Animal Health Technician
8.	Mr. Prakash Das	Accountant
9.	Mr. Sunil Kumar Yadav	Kharidar
10.	Mr. Santosh Yadav	Driver
11.	Mr. Surendra Mishra	Office assistant
12.	Mr. Binod Kapad	Office assistant

3. Laboratory service

The routine work of VL, Janakpur mainly involves examination of fecal sample, postmortem examination, Sero-Surveillance, CMT test of milk samples and bacterial culture and sensitivity testing, outbreak investigation and vaccine bank management. Milk samples were tested to isolate and identify the bacteria responsible for clinical and subclinical mastitis. Blood samples was brought from different districts of Madhesh Province for complete blood count and blood parasite identification. Serum samples were examined for total protein, calcium, phosphorus, glucose, magnesium, brucellosis, etc. Examination of skin scraping and urine was frequently conducted in VL Janakpur. Drug sensitivity test is in regular basis after bacterial culture of positive sample.

3.1 Pathology section

3.1.1 Parasitological examination

Parasitological examination from faeces of different animals has been done routinely. The fecal sample are received mainly from farmers directly or referred by province veterinary hospitals of Dhanusha, Mahottari, Sarlahi, Sinnduli, Rautahat and Bara districts. For the gastro intestinal parasites, Mc'master technique is followed to count eggs per gram (EPG) in feces.

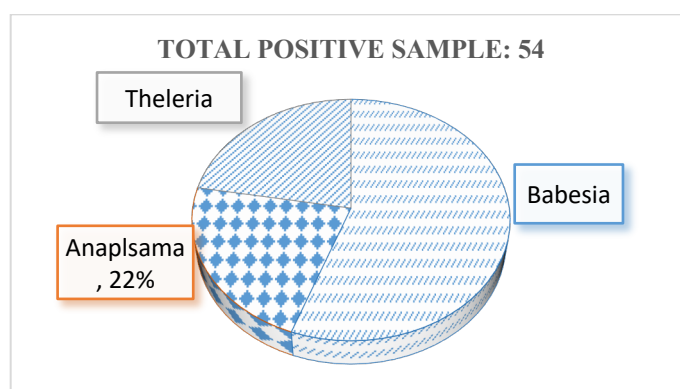
In the F/Y 2081/82, a total of 303 fecal samples were received for testing, among which 193 fecal samples were from cattle, 83 from buffalo and 27 from goat. Among these samples, 196 samples (64.69%) were found positive for endoparasites.

Table 2: Details of Fecal Examination

S.N.	Species	Total Sample	Positive	Major findings
1	Cattle	193	125	Fasciola, Paramphistomum, Ascaris, Strongylus, Toxocara
2	Buffalo	83	54	
3	Goat	27	17	Strongyles, Monezia, Hemonchus
	Total	303	196	

3.1.2 Haematological examination

A total of 152 Blood sample were examined for different blood parameters as well as for blood parasites. Among them 98 samples were found negative for any blood parasites and rest 54 were found positive for different blood parasites.

**Figure 1: Hemoprotozoans species identified at VL.****3.1.3 Pathological Examination**

The pathological examination includes mostly post-mortem examination of the dead birds received from commercial poultry farms, and few goats. Most of the cases were from Dhanusha and Mahottari district and some from Sindhuli, Sarlahi, Rauthat, Saptari and Sirha district. A total 605 cases of post mortem were performed during the F/Y 2081/82.

Table 3: Species wise Postmortem details of F/Y 2081/82

S.N	Species	Total No of Sample
1	Commercial Broiler	468
2	Commercial Layers	67
3	Ducks	42
4	Pigeon	25
5	Goat	2
Total No of PM		604

Poultry disease based on Postmortem

Based on PM finding of poultry, different bacterial, viral, fungal and managerial disease were identified. Colibacillosis was found to be most prominent finding followed by mycotoxicosis, ascitis, heatstress, CRD, Gout, omphalitis, Infectious Brusal Disease (IBDV) etc.

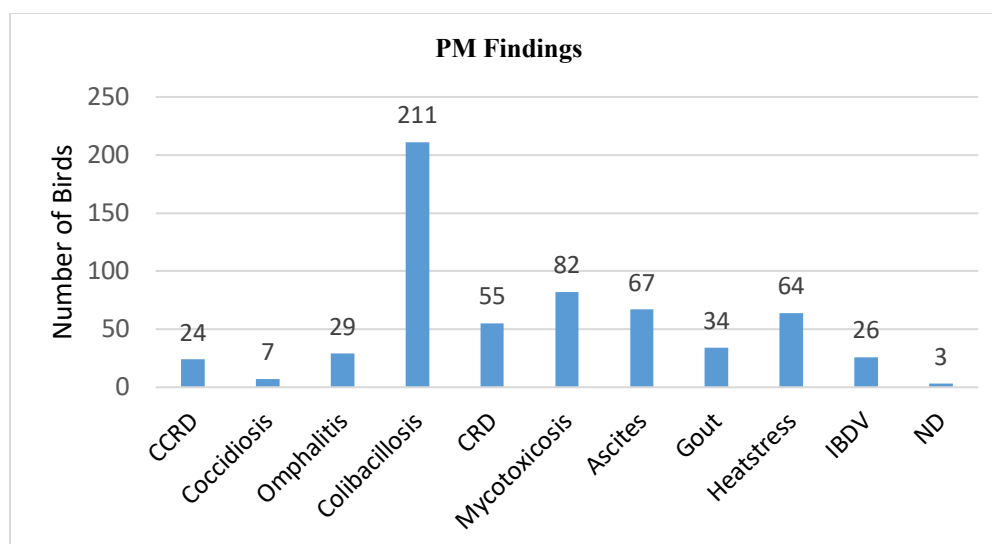


Figure 2: Tentative diagnosis based on postmortem examination

3.2 Microbiology section

Different types of samples were submitted to this unit for microbiological culture and AST. Milk, tissue and swab samples were cultured in Nutrient Agar, Macconkey Agar and other sselective and enrichment agar and broth. They were incubated at 37c for 18-24 hrs. Cultural isolates were identified based on colony characteristics, Gram's staining and different biochemical test and Antibiotic sensitivity test (AST) was performed.

Table 4: Different bacterial isolates on microbial examination

Type of Sample	No of sample Tested	Organism Isolated	No Growth	Type of Bacteria Isolated
Milk	488	342	146	<i>Staphylococcus</i> , <i>Streptococcus</i> , <i>E. coli</i>
Poultry (liver, Faeces, Caeca)	190	144	76	<i>E. coli</i> , <i>Salmonella</i> , <i>Enterococcus</i>
Wound swab	2	2		<i>Pseudomonas</i> , <i>E.coli</i>

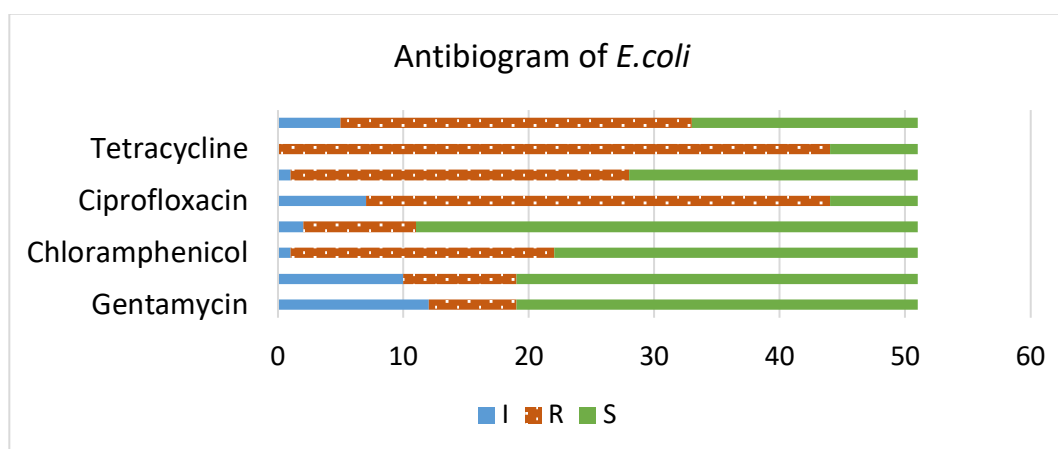


Figure 3: AST Pattern against E.coli

3.3 Molecular biology and serological examination

Veterinary laboratory provides rapid diagnostic and ELISA test for different diseases of animals and birds. Also Plate agglutination test for Brucella as Rose Bengal Test, Salmonella, Mycoplasma was also performed. Cases of LSD was also reported from few districts of Madesh Province, for which sample was collected and dispatched

to CVL for further testing. Based on the lateral flow assay result PPR, Rabies, IBD, ND, AI etc were screened. The notifiable diseases like PPR, LSD and Rabies were further confirmed by molecular or other appropriate test at CVL.

Table 5: RDT test result

Name Of Disease	Total Number of Sample Tested	Positive
ASF	14	0
PPR	32	3
Rose Bengal Plate Test (RBPT)	420	0
Avian Influenza	350	0
Rabies	5	2
<i>Salmonella Pullorum</i>	54	12
<i>Mycoplasma gallisepticum</i>	63	17
Canine Distemper	22	1
Parvo Virus	29	9
IBDV	46	14
IB	32	2
ND	40	5

3.4 Seromonitoring

Seromonitoring for the evaluation of vaccines used under National Animal Disease Control Program against PPR, FMD was conducted. Serum samples were collected from different districts following standard sampling plan as advised by CVL. At least three local level were selected from each district randomly, and furthermore at least three wards were selected randomly from each local level and samples were collected randomly from atleast three household from vaccinated animals. Serum sample were collected and tested for PPR at VL using ELISA and FMD seromonitoring samples were sent to FMD and TADs Lab.

Veterinary Laboratory Pokhara

1. Introduction

Veterinary Laboratory, Pokhara was established in the year 2049 B.S. (1992 AD) as a Regional Veterinary Laboratory for the then western development region and had the objective of disease diagnosis and outbreak investigation in sixteen districts of then Western Development Region. Following federal structuring of the nation, the laboratory was renamed as Veterinary Laboratory Pokhara and is responsible to provide service to the eleven districts of Gandaki province and six districts of Lumbini Province.

The laboratory is located at Pokhara Metropolitan City, Ward number 12, Hospital Chowk. This laboratory has been providing quality service in the detection and prevention of diseases by conducting responsible and accountable investigations into animal diseases and providing accessible, accountable, timely, and accurate diagnostic services. The laboratory is responsible for food safety, outbreak investigation, preparing epidemiological profile of livestock and poultry diseases and maintaining and disseminating the epidemiological information database on animal health in the district, provincial as well as national networks. With increasing commercialization in livestock and poultry production in the present time, the demand for precise and prompt diagnosis of different animal and poultry diseases is increasing. To meet the demand of the time for molecular based disease diagnosis, the facilities for conventional and real time PCR facilities have been established at the laboratory.

2. Major Laboratory Facilities at VL, Pokhara

The major facilities at VL, Pokhara are described below.

I. Pathology Section

- A. **Parasitological Unit:** Parasitological unit tests for internal parasites (cestodes, trematodes and nematodes) in feces, external parasites (mange) in skin scrapings, blood parasites (*Babesia*, *Ehrlichia*, *Trypanosoma*) through microscopic examination
- B. **Post-mortem Unit:** Pathology unit mainly performs postmortem examinations of various species of animals and collects appropriate samples for the microbiological, parasitological and molecular biological examination.
- C. **Biochemistry Unit:** Biochemistry unit analyzes serum for the estimation of minerals and protein (Ca, P, Mg, TP, Fe, Albumin etc.), urine for estimating albumin, bilirubin, ketone bodies, urobilinogen etc. using a dipstick test kit.
- D. **Hematology Unit:** This unit conducts routine hematological examinations using an automated hemato-analyzer.

II. Microbiology Section

In this section, milk, tissues, blood, aspirated fluids, feces and other samples are examined. Both aerobic and anaerobic culture facilities are available.

- A. **Bacteriology and Mycology Unit:** Culture, biochemical tests, staining and other tests as required for identification of bacterial and fungal organisms are carried from this unit. This unit also performs antibiotic susceptibility test and advice for the appropriate antibiotic for the treatments.
- B. **Virology:** Immunochromatographic assays (Rapid test) are regularly conducted for prompt diagnosis of livestock and poultry disease. Similarly, this unit has facilities for Florescent antibody test (FAT), the gold standard test for rabies diagnosis.

III. Molecular Biology Section:

- A. The Molecular Biology section has facilities for both conventional and real time PCR.
- B. **Serological Unit:** The major activities under this section are RBPT for *Brucella*, PAT test for *Mycoplasma* and *Salmonella* as well as ELISA for various viral and bacterial diseases of livestock and poultry.

3. Human Resource

Table 1: Staffing of VL, Pokhara

S.N	Name of Staff	Designation	Class
1	Dr. Kiran Pandey	Senior Veterinary officer	Gazetted II
2	Dr. Ganesh K.C.	Veterinary Officer	Gazetted III
3	Dr. Dilip Kumar Upadhyaya	Veterinary Officer	Gazetted III
4	Dr. Sachin Regmi	Veterinary Officer	Gazetted III
5	Mr Bikash Paudel	Accountant	Non-Gazetted I
6	Mr Khimlal Adhikari	Veterinary Technician	Non-Gazetted I
7	Mr Amrit Saud	Veterinary Technician	Non-Gazetted I
8	Mr Rajan Shahi	Veterinary Technician	Non-Gazetted I
9	Ms Laxmi Sharma	Asst. Veterinary Technician	Non-Gazetted II
10	Mr Keshab Paudel	Asst. Veterinary Technician	Non-Gazetted II
11	Ms Yamuma Sharma	Kharidar	Non-Gazetted II
12	Mr Surya prasad Sapkota	Office Assistant	Classless
13	Mr Jhalak Bahadur Chhetri	Office assistant	Classless
14	Mr Balram Acharya	Driver	Classless

4. Sample Flow at VL during 2081/2082 (2024/25)

4.1 District wise sample

In the fiscal year 2081/82, a total of 8154 samples were received from different districts. Samples were received from fifteen districts of laboratory coverage, but no samples were received from Kapilvastu and Nawalparasi west. Most samples were received from Kaski district 5349(65.6%) followed by Tanahun 666(8.17%). District wise sample flow is shown in the figure.

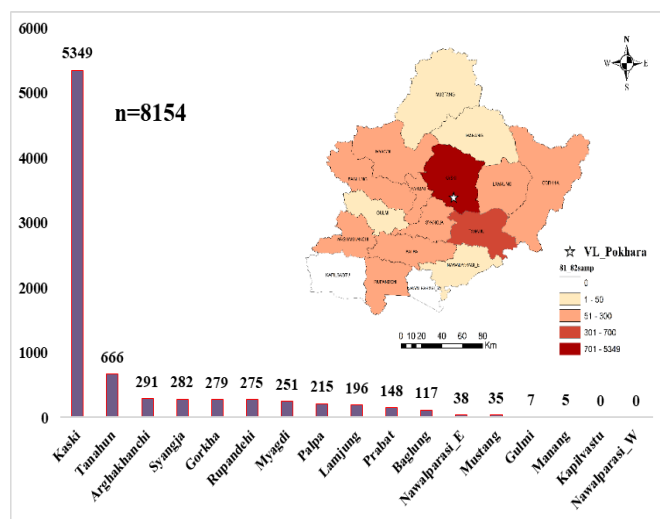


Figure 1: District wise sample flow

4.2 Species wise sample

In FY 2081/82, a total of 8154 samples from twelve different species were tested at Veterinary Laboratory Pokhara. Most frequent samples were from poultry (39%) followed by goats (27%) and cattle (20%). Other species include buffalo (8%), dog (4%), pig (2%) and rarely from horse, cats, fish, wild animals and wild birds as shown in Figure below.

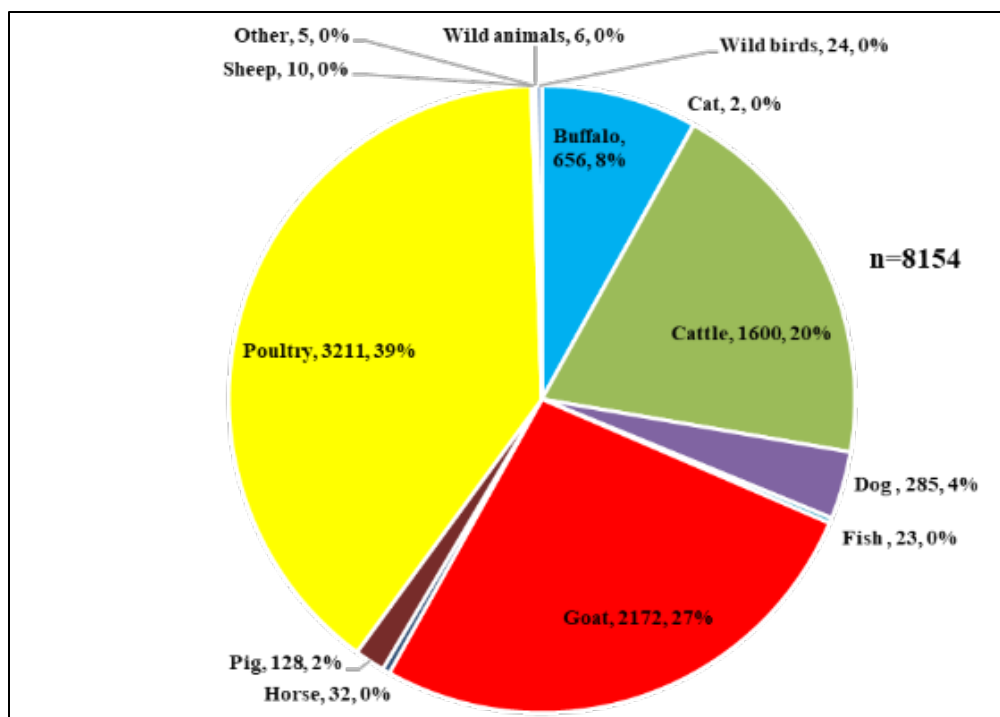


Figure 2: Species wise sample distribution

4.3 Temporal pattern of sample

During FY 2081/82 the temporal distribution of sample flow shows pronounced seasonal patterns. Sample numbers were comparatively lower during the early autumn and winter months, particularly in Aswin and Kartik, indicating reduced disease incidence, lower surveillance activity, or decreased animal movement during this period. A gradual increase was observed from Mangsir through Poush, followed by a brief decline in Magh and Falgun. From Chaitra onward, sample submissions rose markedly, reaching a moderate peak in Baishakh and Jestha and culminating in a sharp surge in Asar, which alone contributed a substantial share of the annual total in samples as shown in figure below. The sero-monitoring programs for various diseases in cattle, buffalo, goats, sheep, and pigs accounted for higher samples flow during Chaitra to Ashar.

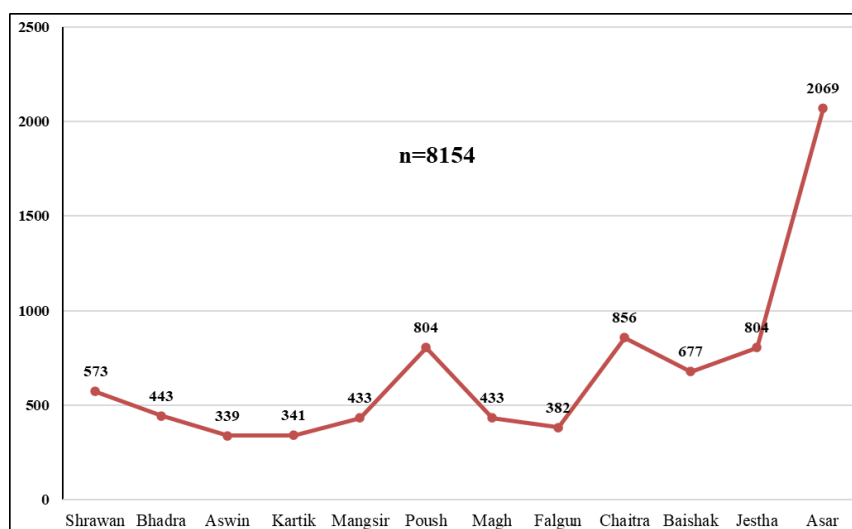


Figure 3: Temporal pattern of sample

4.4 Type of sample

Dead bodies for necropsy examination made up most of the samples, followed by serum, milk, whole blood, and feces. Nasal swab, urine sample, skin scab, brain sample, tracheal sample, and fresh tissue were also received as shown in figure below.

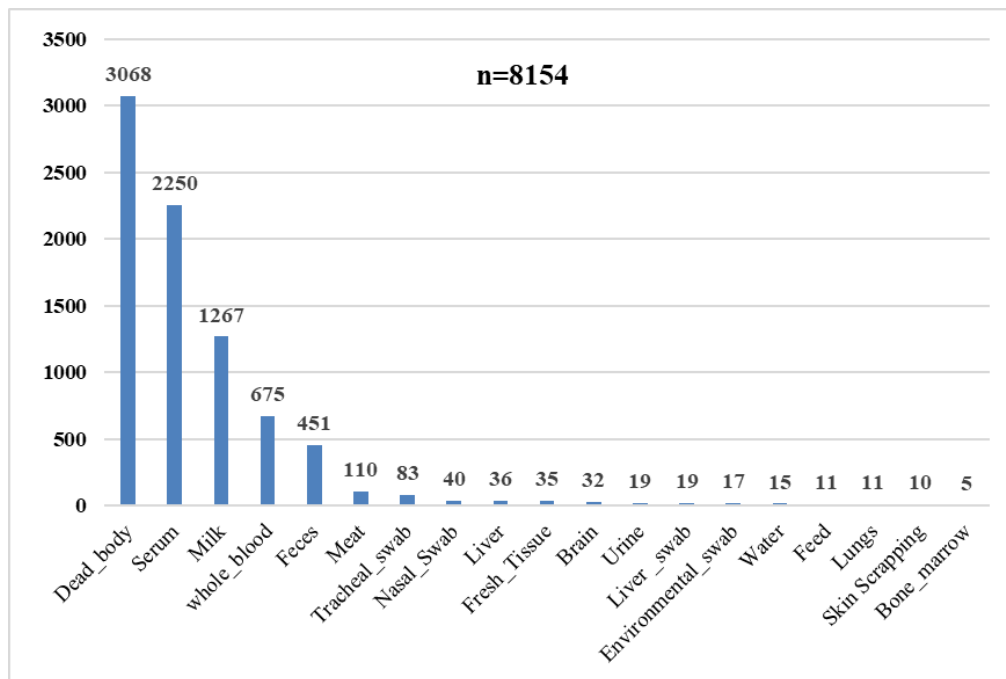


Figure 4: Type of sample

5. Pathology Section

5.1 Details of postmortem examinations

Postmortem examination is one of the major works of veterinary laboratory Pokhara. On average 10-12 necropsies are performed daily on different livestock and poultry. Majority of necropsies are done on poultry followed by small ruminants and swine. Occasionally canine and other animal necropsies are also done. Most of the samples are received from small scale and few from medium scale farmers and large-scale farmers/entrepreneurs.

Table 2: Species wise Postmortem detail

S.No	Species	Frequency
1	Poultry	3024
2	Swine	15
3	Goat	19
4	Dog	6
5	Sheep	3
6	Cat	1
	Total	3068

Table 3: Tentative Diagnosis on PM Samples

S.N.	Species	Total no of sample	Major Disease Diagnosed	Remarks
1	Avian	3024		
1.1	Commercial Broiler	2657	Colibacillosis, Coccidiosis, IBD, CRD, CCRD, Ascites, Mycotoxicosis, Immunosuppression, Enteritis, Omphalitis, salmonellosis, AIV	Diagnosed on the basis of history,

S.N.	Species	Total no of sample	Major Disease Diagnosed	Remarks
1.2	Commercial Layers	149	Salmonellosis, Toxicity, Colibacillosis, ND, AIV, Intestinal Parasite	PME, rapid test, culture and ELISA
1.3	Backyard	111	Colibacillosis, Salmonellosis, Toxicity, Enteritis, ND, AIV, Intestinal Parasite	
1.4	Dual purpose Chicken	87	Colibacillosis, Salmonellosis, Toxicity, Enteritis, ND, AIV, Intestinal Parasite	
1.5	Parent stock	10	Necrotic enteritis, Colibacillosis	
1.6	Kalij	7	Nephritis, Salmonellosis	
1.7	Duck	3	Enteritis	
2	Sheep and Goat	22	Helminthiasis, Pneumonia	
3	Swine	15	ASF, Pneumonia, Enteritis	
4	Dog and Cat	7	Rabies	
	Total	3068		

5.2 Poultry disease based on Postmortem

On postmortem examination of 3024 poultry samples, various bacterial, viral, protozoal, and managerial diseases were diagnosed. Bacterial diseases were the most prominent, accounting for the highest proportion of total cases. Colibacillosis (24.4%) was the leading disease condition followed by CRD/CCRD (19.0%), and Infectious Bursal Disease (IBD) (14.7%). Ascites (9.7%) and Coccidiosis (8.6%) were also commonly observed. Other diseases recorded included Mycotoxosis (7.1%), Salmonellosis (7.0%), and Nephritis (5.0%), while Avian Influenza (1.3%) and Helminthiasis (0.4%) were comparatively less frequent. A small proportion (2.9%) included miscellaneous or other conditions. Overall, bacterial and managerial diseases were the dominant causes of mortality in poultry as revealed by postmortem findings.

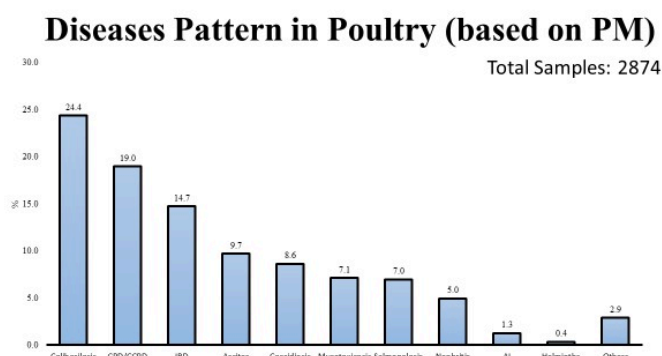


Figure 5: Disease pattern in Poultry based on PM findings

5.3 Hematological Test:

In this fiscal year, 419 blood samples were tested for blood count and parasites. The result of the test is shown in table below.

Table 4: Species wise Hematological detail of F/Y 2081.82

S.No.	Species	Frequency
1	Canine	228
2	Cattle	55
3	Buffalo	27
4	Caprine	75
5	Others	34
	Total	419

Table 5: Blood parasites identified

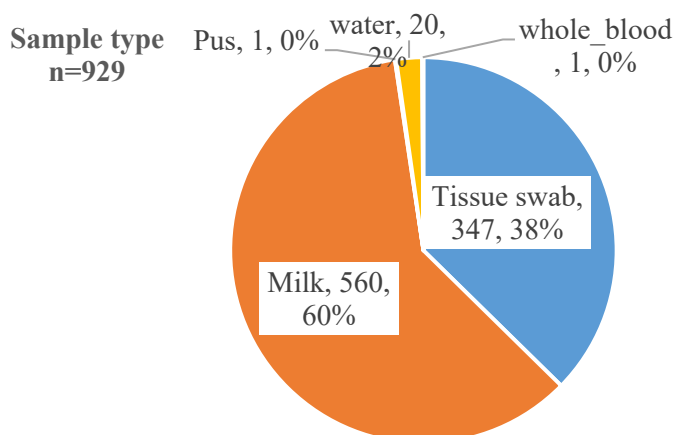
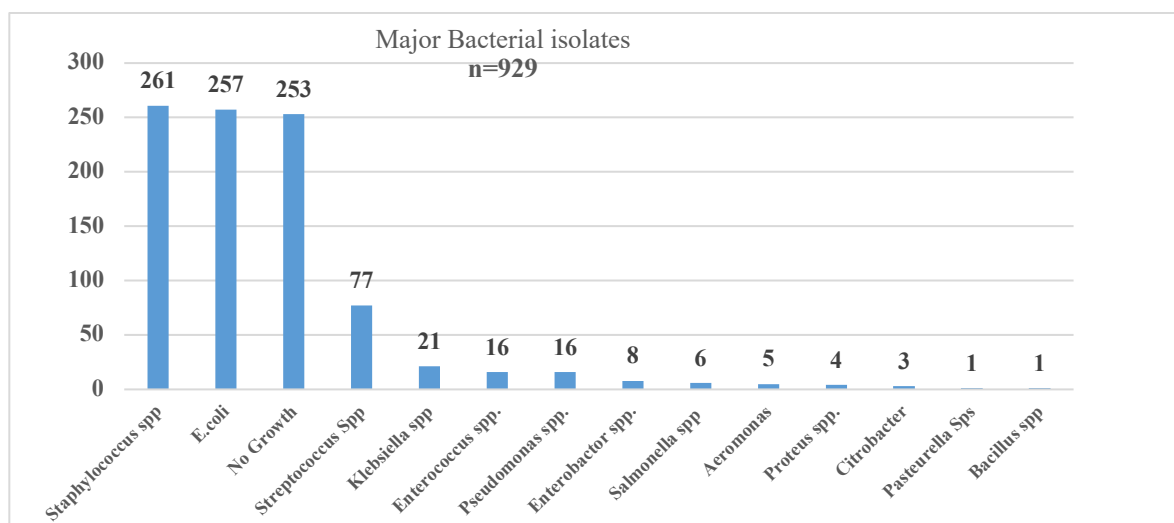
S.No.	Blood Parasite	Frequency
1	<i>E. canis</i>	13
2	<i>Babesia</i>	8
3	<i>Anaplasma</i>	2

5.4 Parasitological Examination

Fecal samples from cattle, buffalo, goat and sheep were evaluated with quantitative method (EPG). A total of 489 samples were tested and the major findings include heavy load of GI parasites with progressive inefficiency of anthelmintics is goat. Major GI parasites identified included Strongyles (*Strongyloides*, *Haemonchus*, *Trichuris*) with EPG ranges from 100-13200.

6. Microbiological Examination

In F/Y 2081/082, a total of 929 samples were received for bacterial culture and AST. Different samples received and major isolates obtained are shown in figure below.

**Figure 6: Sample type for Bacterial culture and AST****Figure 8: Major bacterial isolates**

Mastitis Test

In F/Y 2081/082, a total of 861 milk samples were tested by CMT. Out of 861 samples received, 516 were from cattle and 345 were from buffalo. 66% (342) of the milk samples from cattle were tested positive for CMT while 72% (248) of the milk samples from buffalo were positive. Almost one third of the samples received could not be sent for Culture and AST as samples were collected in non-sterile bottles. This indicates still majority of the farmers are unaware of the milk sample collection and dispatch techniques for CMT, culture, and AST. Out of 560 samples cultured, no growth was found in 139 samples, and bacterial growth was found in 421 samples. The predominant bacteria isolated in the milk sample were Staphylococcus (250), followed by Streptococcus (76), E. coli (62), Klebsiella (16), Pseudomonas (12) and Enterococcus (5).

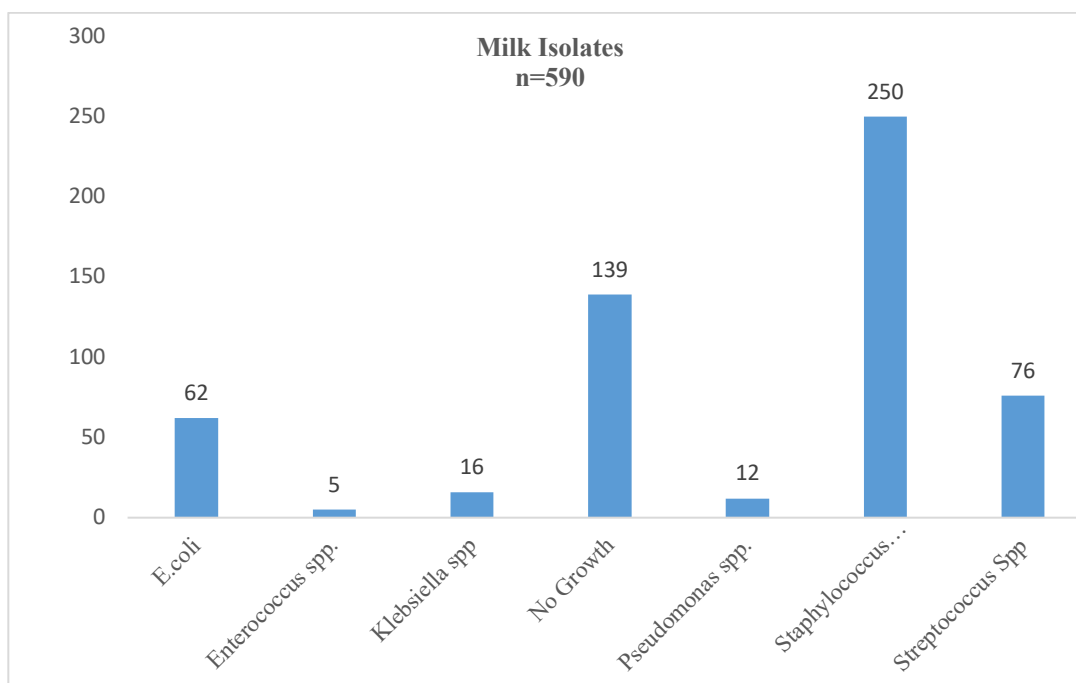


Figure 9: Mastitis Test Results

Antibiogram of milk sample

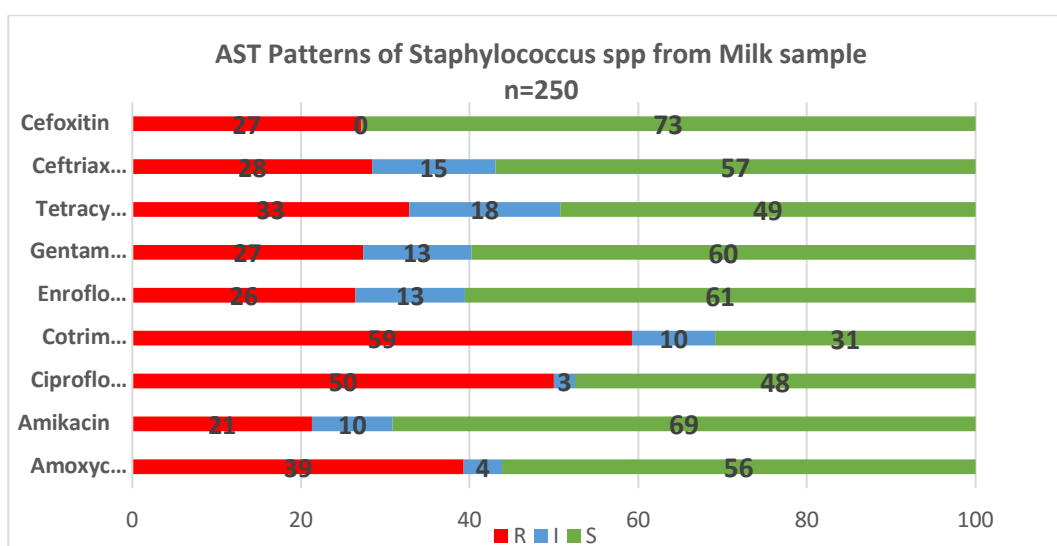


Figure 10: AST Pattern against Staphylococcus spp

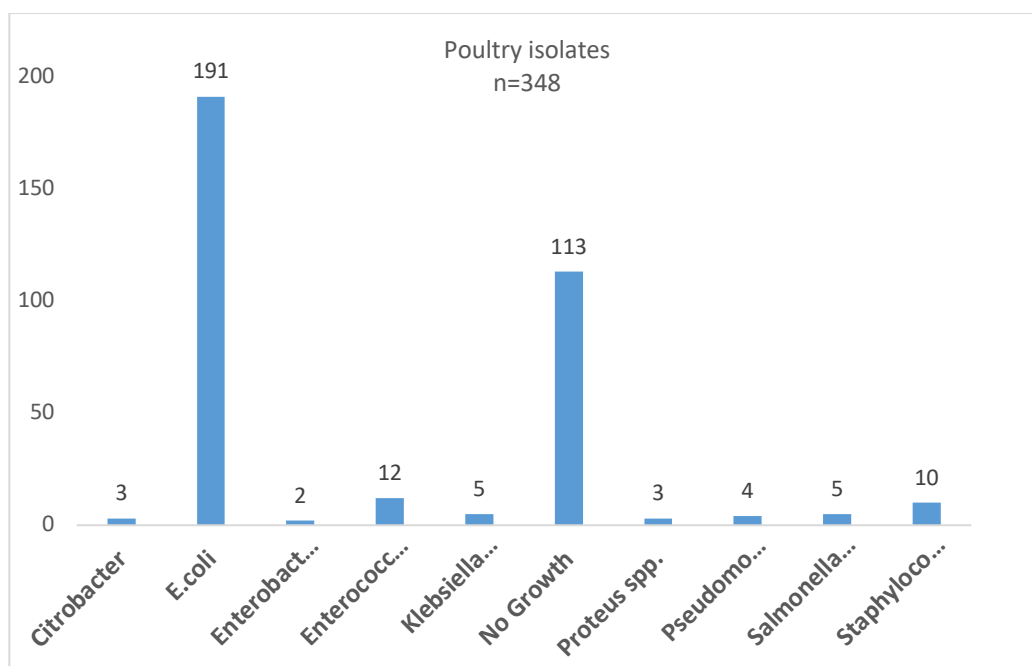
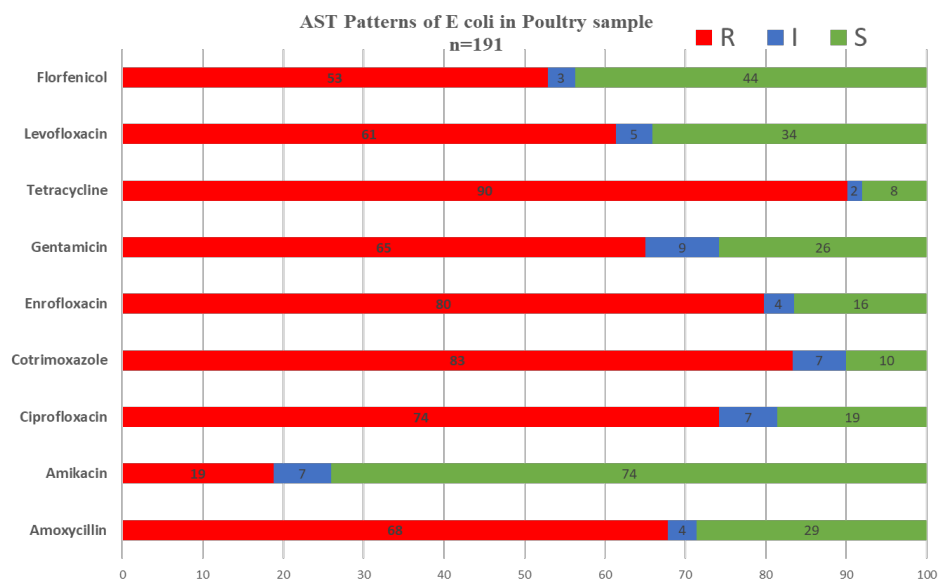


Figure 11: Microbial culture of poultry samples

Antibiogram of E. coli in poultry



Summary result on Rapid/Screening test:

Rapid diagnostic tests (RDTs) based on immunochromatographic action like lateral flow or agglutination test was performed for suspected diseases. The results obtained from RDTs were confirmed by other tests such as culture, ELISA, PCR and other suitable tests. The samples that could not be tested in the laboratory were dispatched to CVL, Tripureswor, Kathmandu and tested there.

In fiscal year 2081/82, VL, Pokhara performed the RDTs as per following:

Table 6: Rapid test result

S. No.	Disease	Tested	Positive
1	Avian Influenza (Flu A)	371	32
2	Newcastle Disease	65	9
3	Infectious Bursal disease	225	132
4	Infectious Bronchitis	21	2
5	Salmonellosis	672	166
6	Mycoplasma infection	605	164
7	Coccidiosis (Microscopy)	831	311

Summary report on Seromonitoring:

A cross-sectional study was carried out from March 2025 to July 2025 in 9 districts of laboratory working area to evaluate the performance of vaccination program in different animal species. Nationwide standardized multistage sampling technique was used. Three local level from each district was selected based on history of vaccination. Wards and livestock farms were randomly selected from respective local levels. Based on number of animals vaccinated at least three wards were selected and animals were sampled randomly.

While selecting study area the reference was taken from secondary data of Veterinary Hospital and Livestock Service Expert Centers (VHLSEC) of respective districts and Livestock Service Section (LSS) of respective local levels and other details were obtained from farmers of study area.

Samples and data collection

About 5 ml blood was aseptically collected by venipuncture in a sterile 10 ml syringes and transferred to clot activator tube. Then the blood samples were left to clot at room temperature overnight, and serum was obtained. Serum samples were then stored at -20°C until testing. The serum samples were taken after 3 weeks of vaccination in animals. A total of 3372 serum samples were collected 541 samples for FMD Sero-monitoring from cattle and buffaloes, 2831 samples for PPR Sero-monitoring from sheep and goats, for the test from vaccinated animals.

The questionnaire was developed to gather information related to the status of farms and animals during sample collection and is included in appendix-I.

Laboratory Investigation

Laboratory work was performed at VL, Pokhara. ID-Screen® FMD Type O Competition ELISA kit manufactured by "ID.vet Innovative Diagnostics, France" was used for the detection of antibodies in individual serum for seromonitoring of FMD and ID-Screen® PPR Competition ELISA kit manufactured by "ID.vet Innovative Diagnostics, France" was used for the detection of antibodies in individual serum for seromonitoring of PPR. The test procedure was done in accordance with the procedure detailed in the manufacturer's protocol.

RESULTS**Test result and Seropositivity of FMD Vaccine:**

Out of 461 samples tested for antibodies against the Foot and Mouth Disease Virus (FMDV) serotype O by competitive ELISA, 370 samples (80.26 %) were found to be positive while 91 samples (19.74%) were found to be negative as shown in table below.

Table 7: Summary of FMD Sero monitoring test

Total number of samples	Test result		Seropositivity (%)
	Number of positive samples	Number of negative samples	
461	370	91	80.26

Table 8: Test result of seropositivity of FMD vaccine in different districts

District	Total number of samples	Number of positive samples	Seropositivity (%) (2081/82)	Seropositivity (%) (2080/81)	Seropositivity (%) (2079/80)	Seropositivity (%) (2078/79)
Kaski	201	169	84.08	0	54.17	76.50
Tanahun				87.27	91.58	98.39
Nawalpur				81.48	96.86	97.00
Gorkha				0	83.08	37.50
Lamjung				84.75	86.96	96.15
Myagdi				0	87.84	98.00
Parbat	92	76	82.61	81.40	96.15	94.44
Baglung	92	69	75	92.00	77.38	96.15
Syangja	76	56	73.68	78.33	65.28	99.00
Gulmi				43.24		
Palpa				76.19		
Kapilvastu				56.36		
Total	461	370	80.26	79	85	88.36

Test result and Seropositivity of PPR Vaccine:

Out of 1065 samples tested for antibodies against the Peste des Petits Ruminants (PPR) virus by competitive ELISA, 847 samples (79.53%) samples were found to be positive while 218 samples (20.47%) tested were found to be negative as shown in table below.

Table 9: Test result and Seropositivity of PPR Vaccine

Total number of samples	Test result		Seropositivity (%)
	Number of positive samples	Number of negative samples	
1065	847	218	79.53

Table 10: Test result of seropositivity of PPR vaccine in different districts

District	Total number of samples	Number of positive samples	Seropositivity (%) (2081/82)	Seropositivity (%) (2080/81)	Seropositivity (%) (2079/80)	Seropositivity (%) (2078/79)
Kaski	171	136	79.53	50.34	38.04	67.50
Tanahun	165	123	74.55	75.75	81.39	91.94
Nawalparasi E				72.22	95.56	75.31
Gorkha	192	156	81.25	85.67	88.27	87.78
Lamjung	160	138	86.25	76.24	83.65	83.70
Myagdi	183	115	62.84	83.59	91	86.96
Parbat				38.66	83.18	81.70
Baglung				85.35	40.21	80.77
Syangja				70.69	61.16	78.01
Nawalparasi W				89.64		
Kapilvastu				62.83		
Rupandehi				84.07		
Palpa	194	179	92.27	73		
Gulmi				83.19		
Mustang				62.71		
Total	1065	847	79.53	74	79.06	80.30

Limitations of study:

The serosurveillance of vaccines from all districts of working areas could not be completed. The sample needs to be collected at least after 21 days of vaccination and considering this criterion there was difficulty in collecting the individual serum samples in rainy season. The seromonitoring of ND and CSF could not be completed due to inadequate samples and time because tracing of vaccinated local birds was difficult and time consuming and the risk of ASF in pigs.

Due to lack of animal identification and traceability system and poor recording system in farm there is problem in identification of vaccinated and unvaccinated animals.

Conclusion

The study on seromonitoring of FMD vaccines Serotype O in the cattle and buffaloes Gandaki province focusing on making Dhaulagiri zone was conducted as a focus to assess the situation for moving towards FMD free with vaccination, and seromonitoring of PPR vaccine in the goat and sheep reared by farmers in different districts of Gandaki and Lumbini Province.

The overall seropositivity of FMD vaccine was found to be 80.26%. About 84.08% of animals were found seropositive in Kaski district followed by 82.61% in Parbat district. The least number of seropositive cattle and buffalo (73.68%) were found in Syangja followed by Baglung (75%) district.

Similarly, the overall seropositivity of PPR vaccine was found to be 79.53%. 92.27% goats and sheep were found seropositive in Palpa district followed by 86.25% in Lamjung district and 81.25% in Gorkha district. The least number of seropositive goats and sheep (62.84%) were found in Myagdi district followed by Tanahun (74.55%).

The low seroconversion in certain districts might be due to various factors. Inadequate vaccine cold chain maintenance, errors in vaccine transportation, high ratio of animal replacement in a herd and difficulty in identification of vaccinated animals due to lack of animal traceability and poor recording system could be the possible reason for low Sero conversion in testing.

Veterinary Laboratory Surkhet

1. Introduction

Veterinary Laboratory, Surkhet is located at Birendranagar Municipality-7, of the Karnali province. Since its establishment in F/Y 1988/1989 AD, it has been providing diagnostic services in the then mid-western development region and with the adoption of federal system, now the laboratory is providing service in ten districts of Karnali province and six districts of Lumbini province. The mission of the laboratory is to provide diagnostic services, to farmers epidemiological investigation and technical support to VHLSEC, local level veterinary units, veterinary professionals, and others who are responsible for animal health in detection and prevention of animal diseases.

2. Human Resource

Table 1: Position and Staffing of VL, Surkhet

S.N.	Designation	Class	Number of Post	Fulfilled	Remarks
1	Senior Veterinary Officer	Gaz.2	1	1	
2	Veterinary Officer	Gaz.3	3	3	
3	Animal Health Technician	Non.Gaz.1	3	3	
4	Asst. Animal Health Technician	Non.Gaz.2	2	2	
5	Accountant	Non.Gaz.1	1	1	
6	Kharidar	Non.Gaz.2	1	1	
7	Driver	Class less	2	1	1 contract
8	Office Helper	Class less	2	0	2 contract
	Total		15	12	

3. Laboratory Services

3.1 Pathology section

3.1.1 Parasitological examination

Parasitological unit examines the fecal samples of animal species using different methods to estimate the parasitic burden of the nematode, trematode and cestodes. A total of 731 faecal samples were examined and 567 were found positive for various internal parasites. Among them *Ascaris* (34%), *Fasciola* (16%), *Paramphistomum* (11%), *Strongylus* (10%), *Strongyloides* (10%), *Moniezia* (6 %), *Haemonchus* (7 %) and *Trichuris* (6 %), were found major internal parasites identified. Reports of faecal examination are presented in table below.

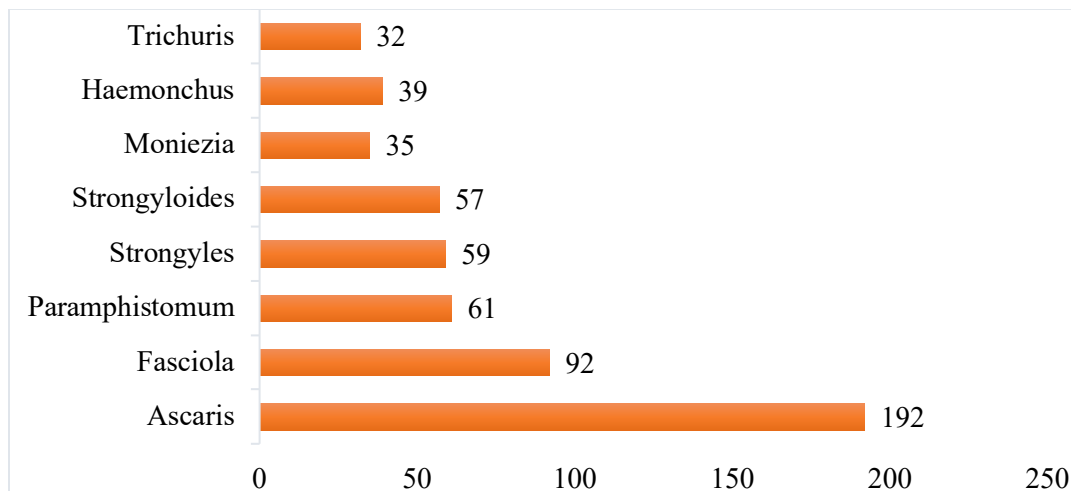


Figure 1: Parasites identified in fecal examination of different animal

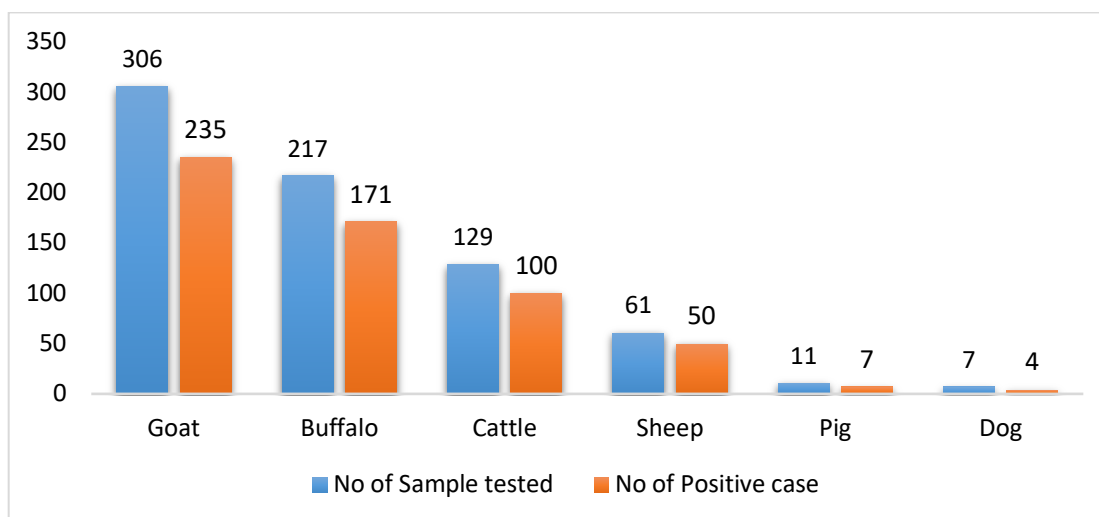


Figure 2: Test result in different animal species

3.1.2 Postmortem examination

During the fiscal year 2081/82, a total of 608 animals were brought for postmortem examination. The details of the animal species brought at VL Surkhet for PM examination are presented in the figure below.

Major number of samples brought for postmortem included poultry followed with goat, pigs and other species. Diseases like colibacillosis, ND, IBD, IB, CRD, mycotoxicity, worm infestation were the major findings based on postmortem examination.

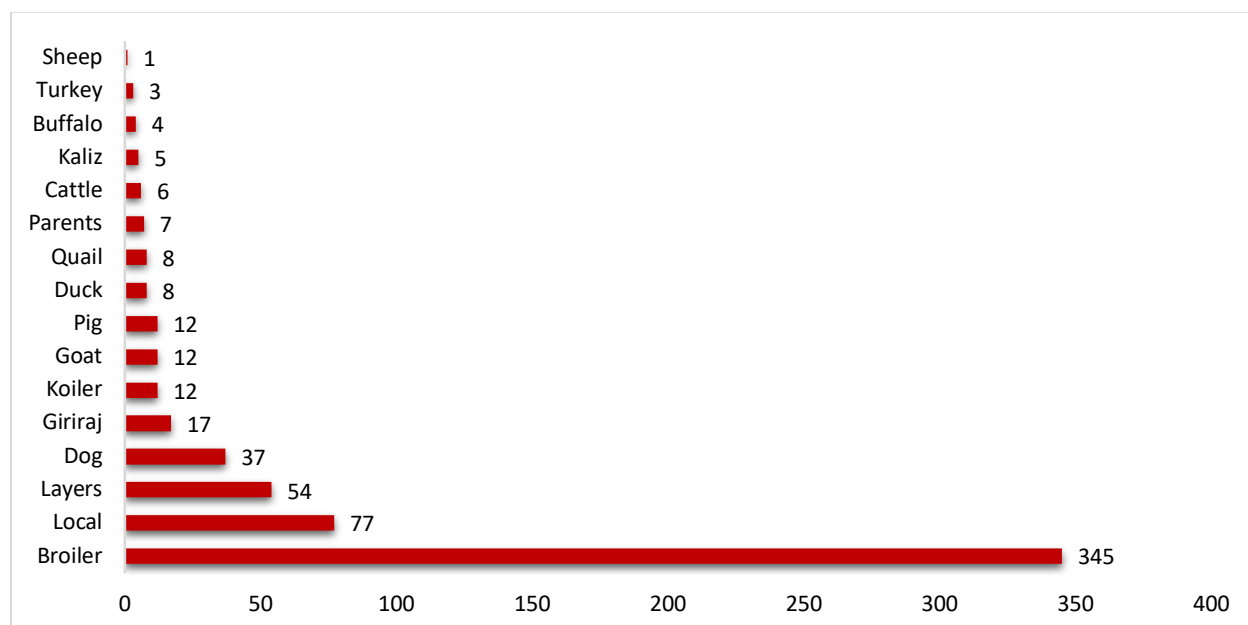


Figure 3: Animal species brought at VL for PM examination

3.1.3 Hematological Test

The Hematology unit is providing routine hematological test for different parameters including Total Erythrocyte Count (TEC) and Total Leukocyte Count (TLC), Differential Leukocyte Count (DLC), Hemoglobin (Hb),

Packed Cell Volume (PCV), and blood smear examination for blood parasite. During the fiscal year 2081/82, 649 blood sample were tested in hematological unit. The result of hematology is as follows.

Species	Total sample tested	Hb test result No of sample (less than normal value)	PCV test result No of sample (less than normal value)
Goat	446	51	39
Sheep	82	8	6
Buffalo	72	18	8
Cattle	30	3	2
Dog	19	4	4
Total	649	84	59

4. Microbiological section

4.1 Culture and Sensitivity Test

The microbiological units receive samples including milk, water and tissues for culture and AST. A total 66 milk samples were received at VL for culture. Major isolates identified are as follows.

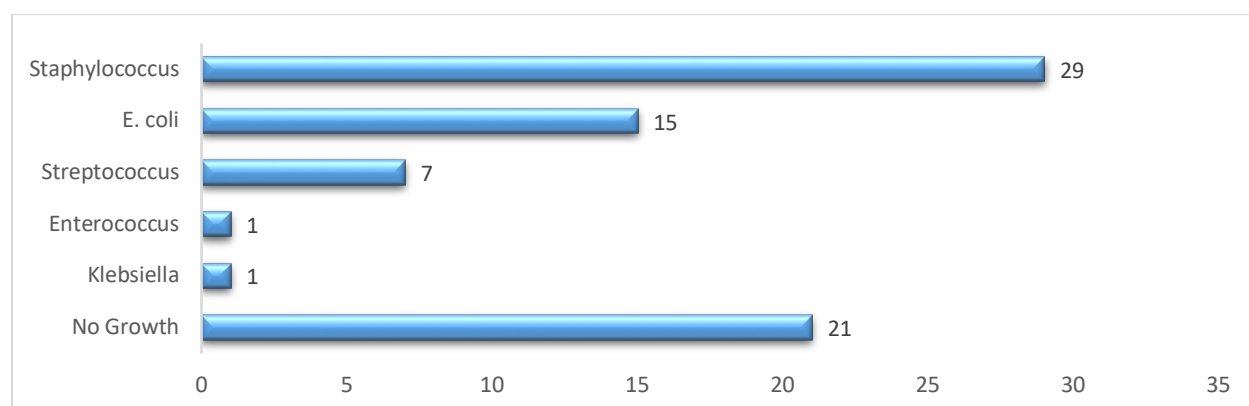


Figure 4: Major isolates identified from Milk Samples

A total of 108 tissue samples were received at VL for culture. The identified major isolates are as follows.

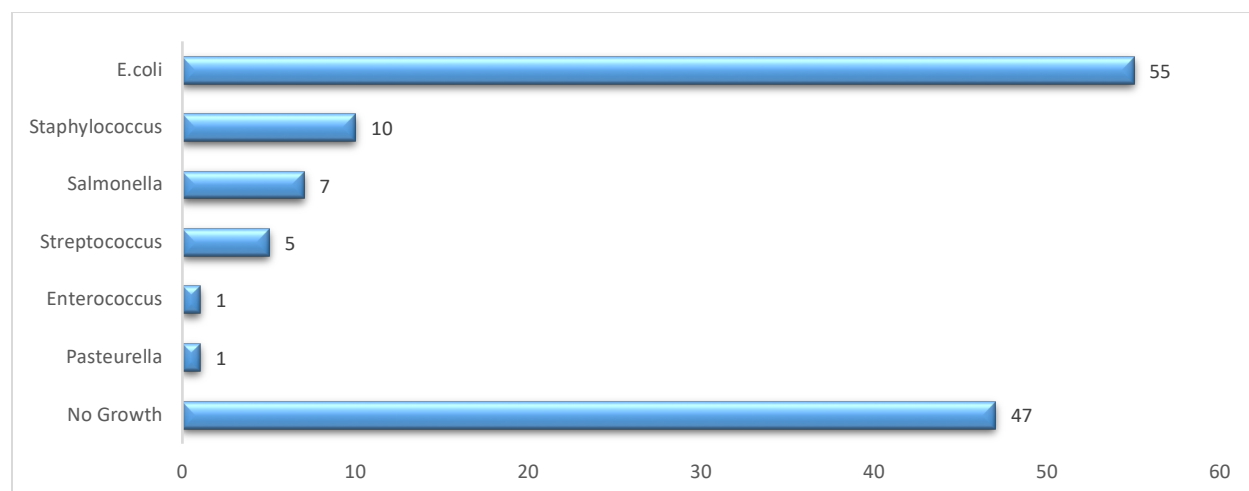


Figure 5: Major isolates identified from tissue Samples

A total of 28 fish tissue samples were received from Bardiya at VL for culture. The Gram staining result of the isolates is as below.

Table 2: Result of bacterial isolate in fish tissue sample

Toral Sample	Gram positive isolate	Gram Negative isolate	No Growth
28	20	2	6

Also 51 poultry feed samples were received at VL for culture. No growth was observed in feed samples.

4.2 California Mastitis Test Result

California mastitis test was used to screen milk samples brought at the laboratory for testing and samples collected in the field during surveillance work. A total of 403 milk sample were tested for CMT, among which 77 samples were found positive in CMT.

	No of Sample tested	CMT positive	% Positive
Surveillance Sample: Banke	237	21	8.86
Surveillance Sample: Surkhet	100	9	9
Clinical case of Lab	66	47	71.21

4.3 AMR Active Surveillance in poultry

AMR surveillance was conducted in healthy poultry sent for human consumption in Salyan and Kalikot distict. A total of 99 cloacal sample from poultry was collected and tested. *E. coli* was the major isolate from these sample and was isolated in 40 cases. Antibigram of the isolated *E. coli* are as follows.

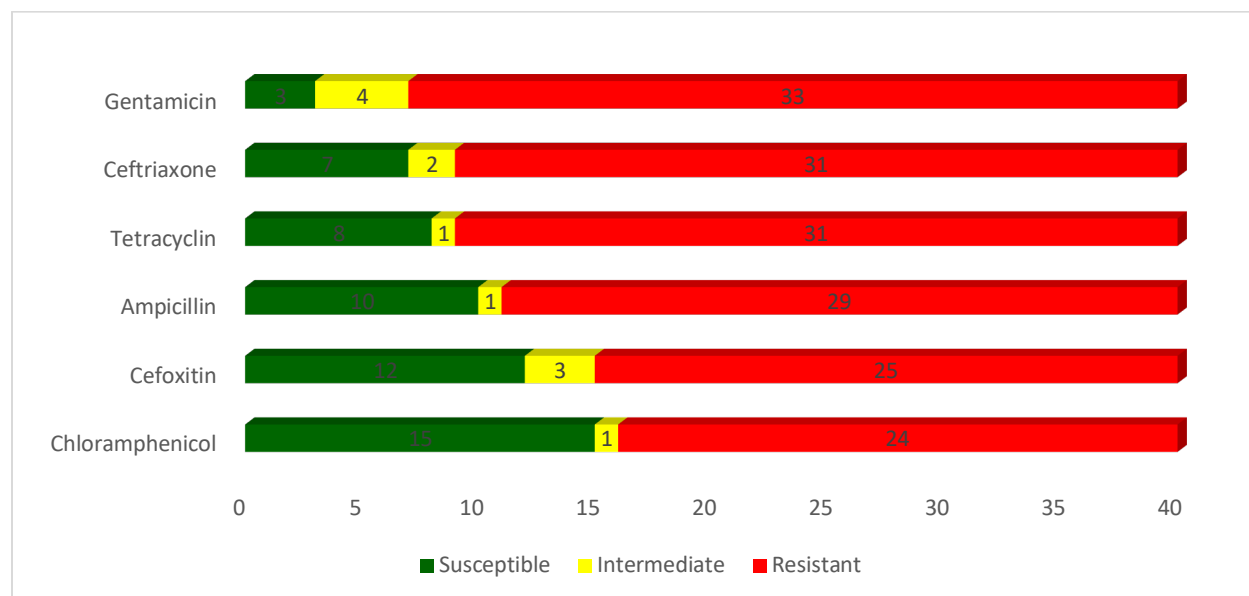


Figure 6: Antibiogram of *E.coli* from poultry (Active surveillance)

4.4 Biorepository Management

In VL, Surkhet, biorepository of isolated bacteria is maintained. More then 200 bacterial isolates from passive and active surveillance with multiple resistance pattern has been stored and managed. Some of the isolates has also been sent to be stored in the biobank of CVL.

4.5 Virological examination

4.5.1 Rabies:

A total of 70 samples of different domestic animal were tested for Rabies diagnosis by Lateral Flow assay at VL surkhet. A total 52 cases were positive for rabies. The results of the rabies test in different animal species temporally and spatially is presented below.

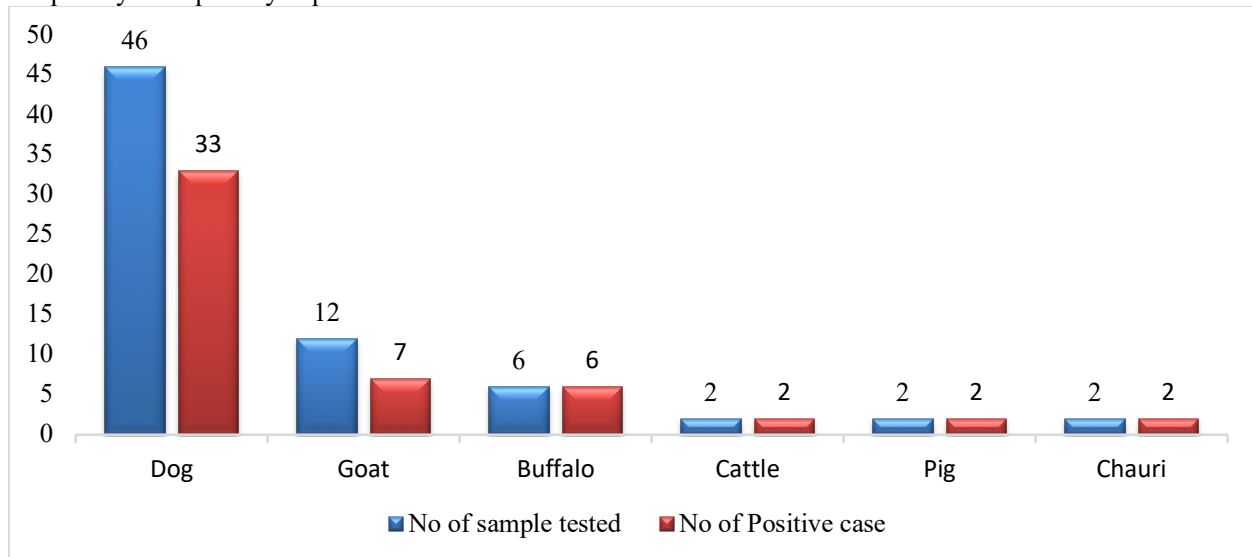


Figure 7: Rabies test result in different species

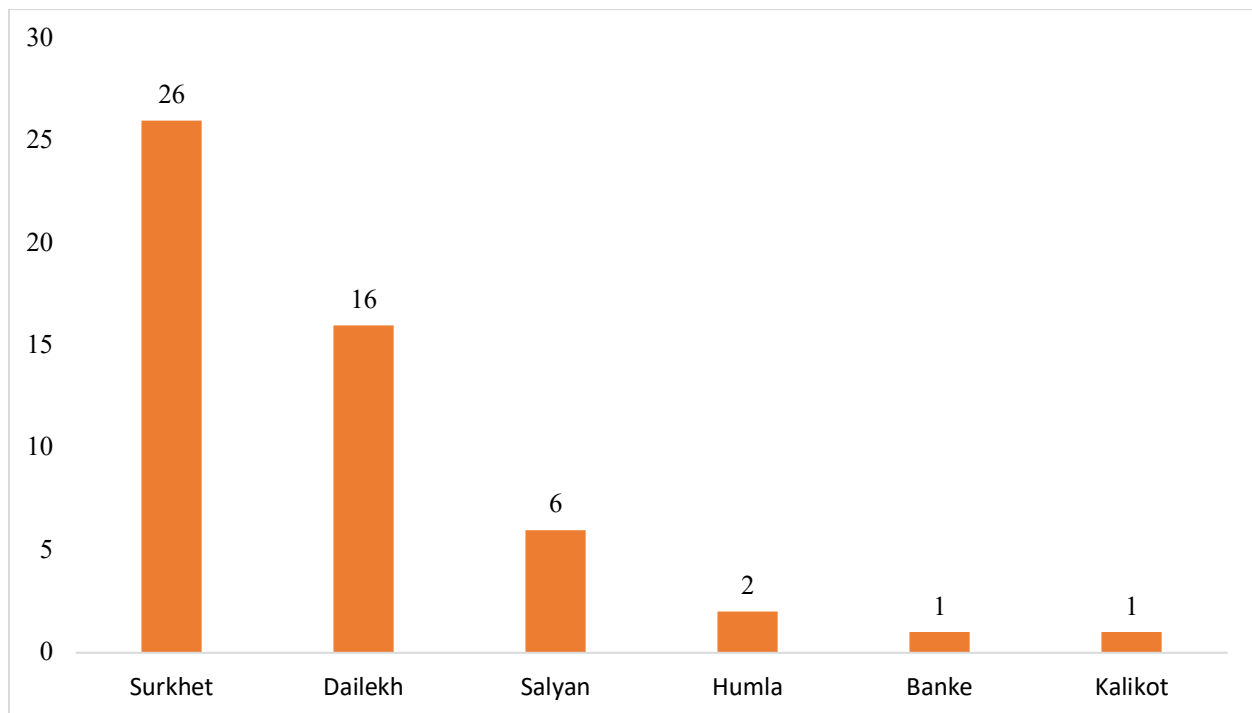


Figure 8: Spatial distribution of Rabies cases.

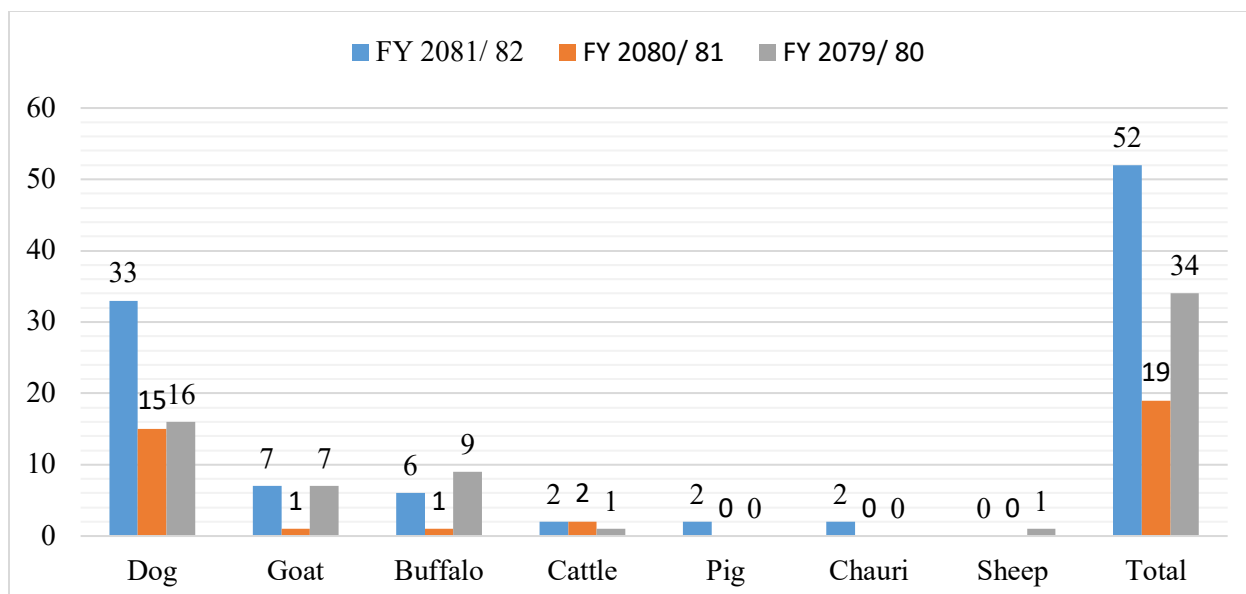


Figure 9: comparison of rabies cases in last three year

4.5.2 PPR

A total of 96 suspected samples of goats were tested for PPR using rapid diagnostic kit at VL, Surkhet, out of which 6 samples (Dang-4, Surkhet-1 and Jajarkot-1) were found positive.

4.5.3 African Swine Fever

African swine fever was identified in two suspected samples from Surkhet and Dang. The clinical suspicion was confirmed by molecular testing at CVL.

4.5.4 Lumpy Skin Disease

Lumpy skin Disease (LSD) outbreak was detected in Chaurjahari, ward no 3, 4 and 7 of Rukum Paschim. Among the 6 samples collected from suspected cases 4 sample were confirmed positive by qPCR. From the investigation, it was identified that the outbreak started from Lahure simal, ward no 3 and then spread to other palikas. There were 220 susceptible population in the affected area among which 60 animals were affected.

4.5.5 Avian Influenza

A total 7 cases were found positive in screening test and were sent for confirmative diagnosis for Avian Influenza. All suspected samples were found positive for low pathogenic avian influenza (Type A Subtype H9). The results of the test are presented below.

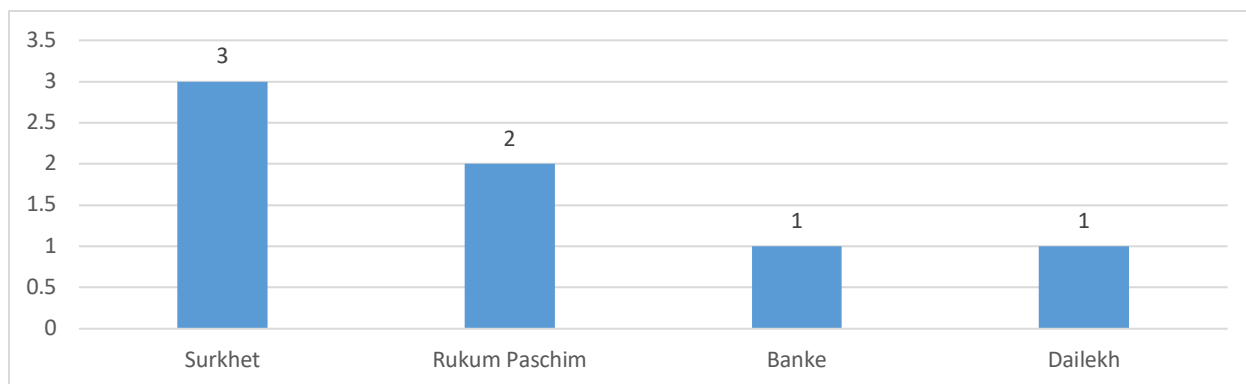


Figure 10: Incidence of LPAI H9 in different districts

4.5.6 Enterotoxemia

Sheep and goat population in mountain and hills has been frequently affected due to change in diet leading to enterotoxemia. Cases were reported from multiple districts; however, six outbreaks of enterotoxaemia were confirmed Toxin ELISA as shown in figure below.

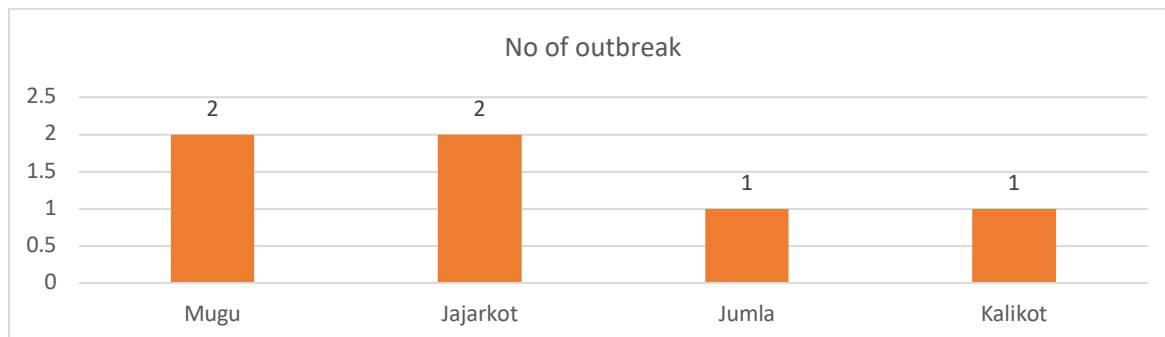


Figure 11: Enterotoxemia detection in sheep and goat

5. Serology:

Serological test for multiple pathogens were conducted during the year. Major diseases tested were brucellosis, toxoplasmosis, chlamydia, Bovine viral diarrhoea, Coxiella, Salmonella, Mycoplasma. For these Antibody ELISA technique and Plate Agglutination Test were used.

Results of various test are shown in figure and table below.

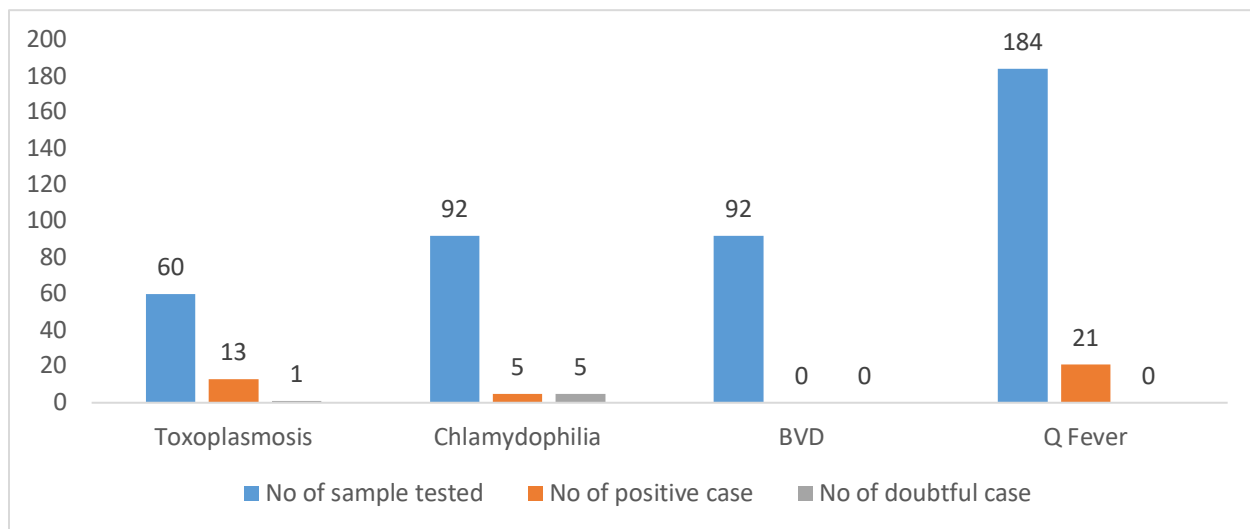


Figure 12: Test result for different diseases using Ab-ELISA.

Table 3: Result of RBPT and PAT test

Disease	Species	No of sample tested	Test Method	Positive case
Brucellosis	Sheep	6	RBPT	0
	Goat	48		0
	Cattle	50		0
Salmonella	Poultry	181	PAT	15
Mycoplasma	Poultry	181	PAT	13
BSE	Cattle	22	Sample send to CVL	

6. Sero-monitoring

Seromonitoring for the evaluation of vaccines used under National Animal Disease Control Program against PPR and FMD was conducted. Serum samples were collected from different districts following standard sampling plan as advised by CVL. At least three local level were selected from each district randomly, and furthermore at least three wards were selected randomly from each local level and samples were collected randomly from atleast three household from vaccinated animals. Samples collected from sheep and goats were tested at the laboratory for PPR seroconversion. Among 780 sample tested, seroconversion was found in 473 serum sample. The result from different district are shown below.

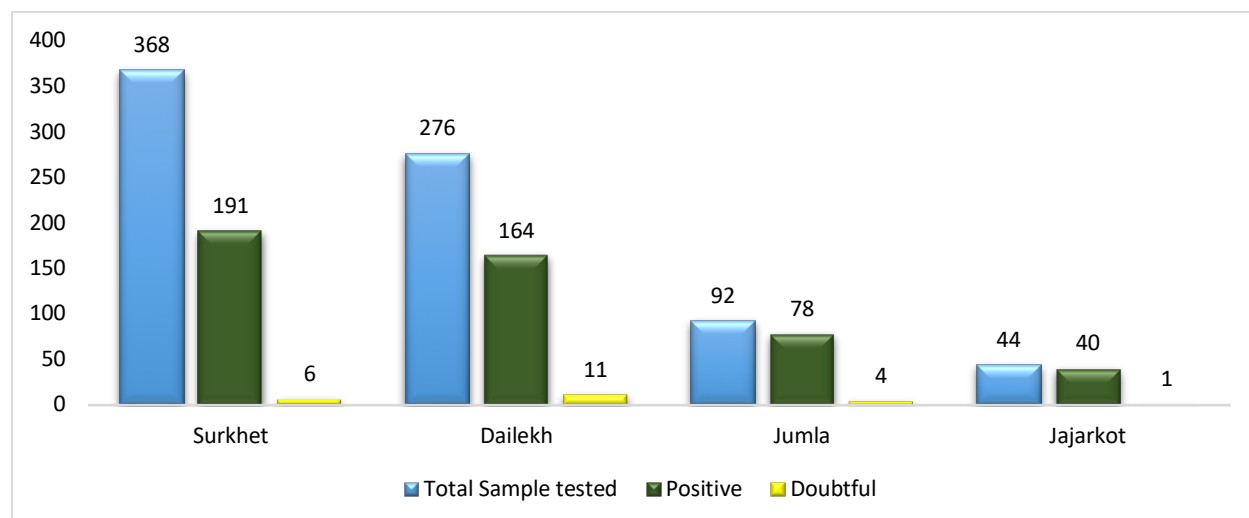


Figure 13: Result of PPR Seromonitoring of PPR from Different Districts

7. Vaccine bank management

VL Surkhet maintains vaccine bank against major diseases to be used in Lumbini and Karnali province. During the fiscal year vaccines for different diseases were provided to districts as shown in table below.

Table 4: Vaccine distribution record

	Stock from last F/Y	Stock Addition this F/Y	Total Vaccine	Total Distributed this F/Y
FMD		472000	472000	358500
PPR	87000	1325600	1412600	1407600
CSF	11500	32700	44200	5000
HS BQ		28000	28000	28000
LSD	27000	60000	87000	45000
Rabies	2540	11500	14040	11400
ND	299400		299400	71000

Veterinary Laboratory Dhangadi

1. Introduction:

Veterinary Laboratory is located in Dhangadhi Sub Metropolitan City ward no 01 of Far-Western province of Nepal. Veterinary Laboratory, Dhangadhi was established in 2049 B.S. as Regional Veterinary Laboratory, Dhangadhi. This laboratory was established as the designated laboratory for the Far-Western development region covering the nine districts. With the adoption of Federal system of governance in the country in the year 2075 B.S., the laboratory was renamed as Veterinary laboratory, Dhangadhi, with working area as before. Veterinary laboratory aims to protect the livestock with the provision of prompt diagnosis of disease and is developing its capacity to function as referral laboratory of specific disease, rabies, which is reported most frequently in the region.

2. Laboratory Services at Veterinary Laboratory, Dhangadhi

2.1 Pathology Section

Post-mortem examination, hematology and biochemistry are major units under the pathology section. This section receives specimens from all over the province either directly or through the respective VHLEC or local level veterinary units. Besides this, veterinary practitioners, livestock and poultry farms as well as farmers deliver specimens for the purpose of disease diagnosis.

2.2 Microbiology Section

This section is responsible for isolation and identification of bacteria and fungus, which receives samples from various sources such as farmers, local level governments, referral samples from private clinics, VHLEC and directly from the field during the outbreaks or surveillance.

Various samples like milk, urine, tissues, water, nasal swabs, ear swabs and skin scrapping are received in this unit for isolation, identification and AST of the organism.

2.3 Molecular Biology Section

Molecular tools are increasingly important in modern animal disease investigation. This section has biosafety level 2 facilities for handling infectious agents. Similarly, this section also has facility for ELISA and other serological tests. Samples are submitted to this unit from the post mortem unit of the laboratory and local veterinary units. This unit perform initial screening of diseases using Lateral Flow Assay (Antigen based) and for the confirmation of the specific disease (PPR, ASF, CSF, PRRS, LSD) samples are sent to CVL. This unit has started RNA/DNA extraction, testing for M-gene (AI) and Rabies using qPCR.

Administration Section

This section governs overall financial, logistic and administrative management of the laboratory. The section is responsible for revenue collection, maintenance of reagents and supplies, financial transactions, vehicle management etc.

3. Human Resource of VL, Dhangadhi

Table 1: Staffing of Veterinary Laboratory, Dhangadhi, Kailali

S.N.	Position	Class	Number	Fulfilled	Remarks
1	Senior Veterinary Officer	Gazetted II	1	1	
2	Veterinary Officer	Gazetted III	3	3	
3	Animal Health Technician	Non-Gazetted I	3	3	
4	Junior Animal Health Technician	Non-Gazetted II	2	2	
5	Accountant	Non-Gazetted I	1	1	
6	Kharidar (Clerk)	Non-Gazetted II	1	1	
7	Driver	No Class	1	1	
8	Office helper	No Class	2	2	
	Total		14	14	

4. Laboratory services offered during the fiscal year 2081/82

4.1 Parasitology:

Altogether 500 fecal samples of cattle, buffalo and goat were tested for different parasitic conditions. Samples were collected from field visit during disease investigation and the investigation program under annual program. The most common helminths identified during fecal examination were *Strongylus* and *Haemonchus* spp. Out of 500 fecal samples tested using EPG, 280 (56 %) samples were positive for any one of the parasitic infestation and 220 samples (44%) were negative.

4.2 Pathology:

During the fiscal year 2081/82, altogether 3207 (poultry, goats, pigs and fish) carcasses were registered at VL, Dhangadhi for postmortem examination and PM was conducted. Most of the samples brought for PM were of poultry. Major pathological conditions diagnosed based on post mortem findings in poultry is presented below.

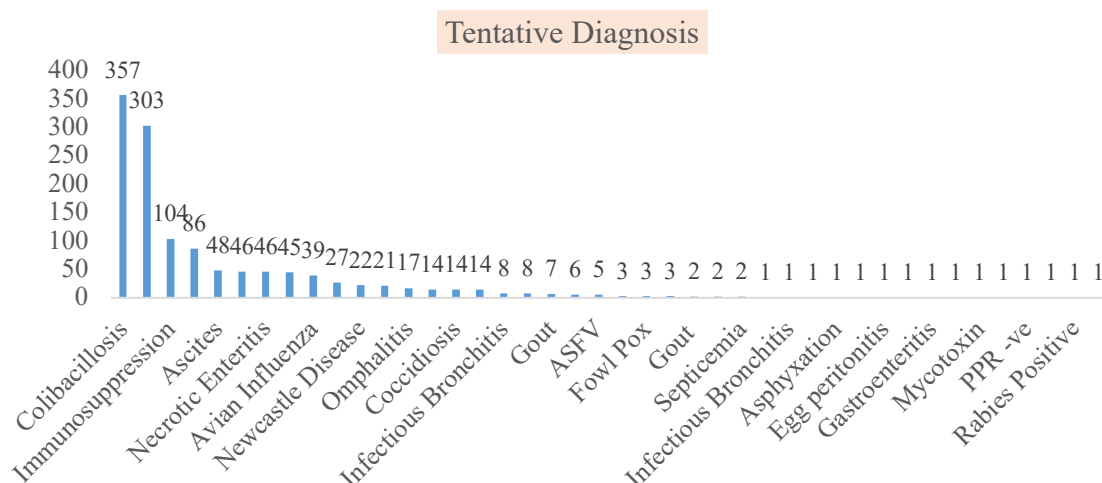


Figure 1: Tentative diagnosis based on PM findings

4.3 Microbiology:

During the fiscal year 2081/82 596 samples (milk, and swab and tissue samples) were tested for bacterial identification and AST. The media used for microbiological culture were Nutrient agar, MacConkey agar, Blood agar, EMB Agar, XLD Agar, and MHA etc. Bacteria were identified on the basis of colony characteristics, Gram's staining biochemical test. The result of microbiological test is presented in the table as below:

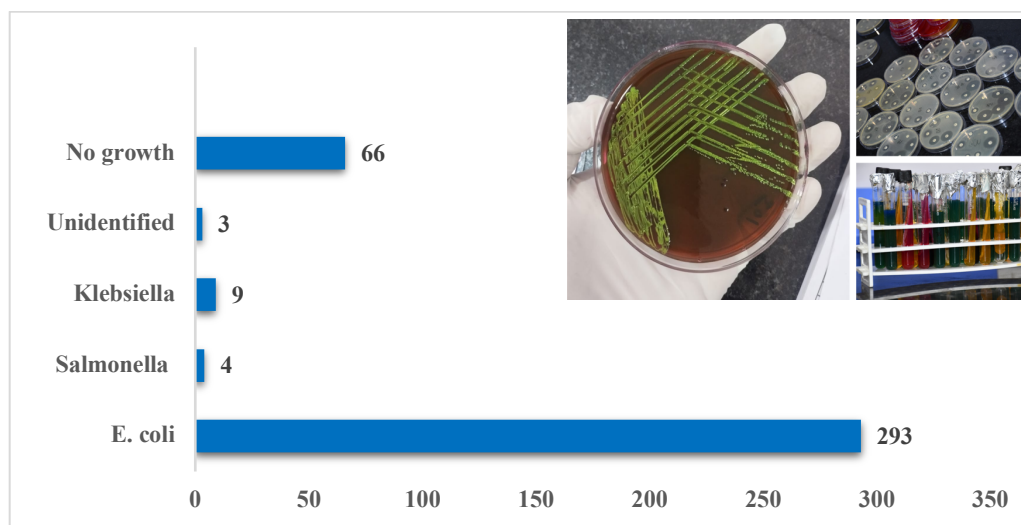


Figure 2: Major isolates from liver samples of poultry (n=375)

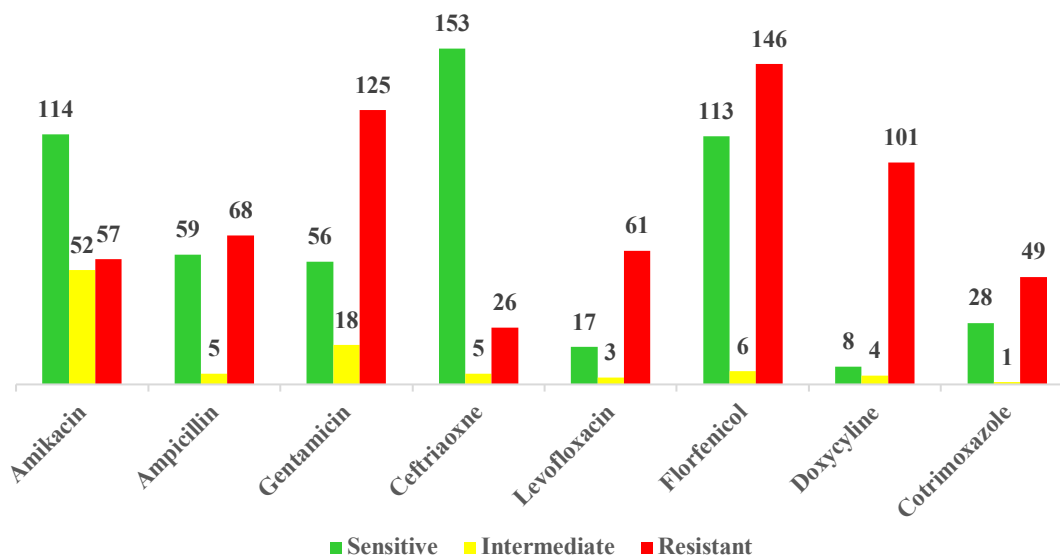


Figure 3: Antibiogram of Escherichia coli Isolated from Liver Samples of Poultry

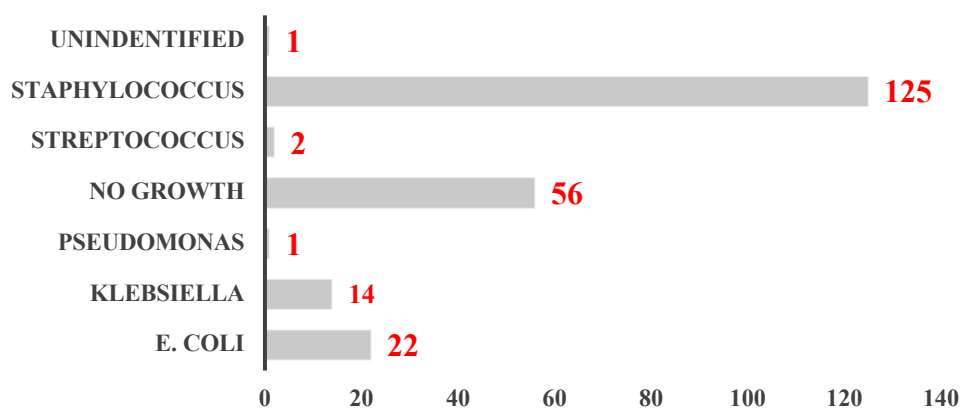


Figure 4: Major isolates from milk samples (n=221)

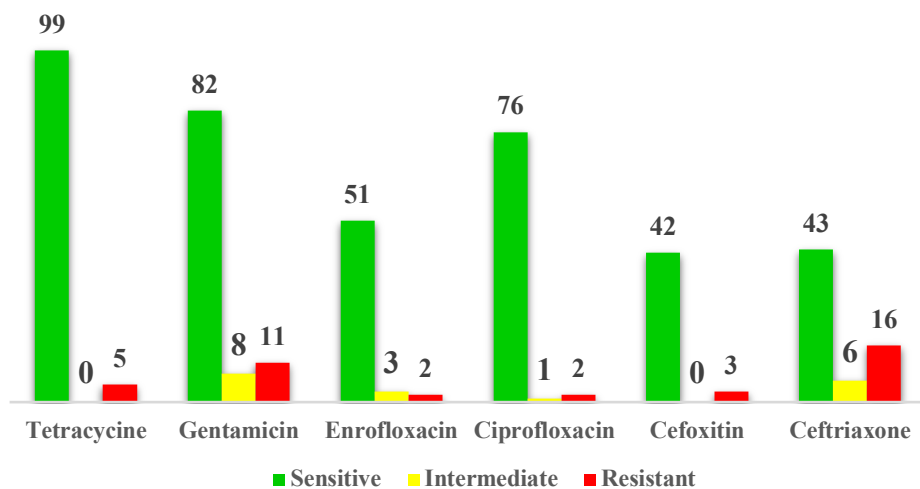


Figure 5: Antibiogram of Staphylococcus aureus in Milk Samples (2081/2082)

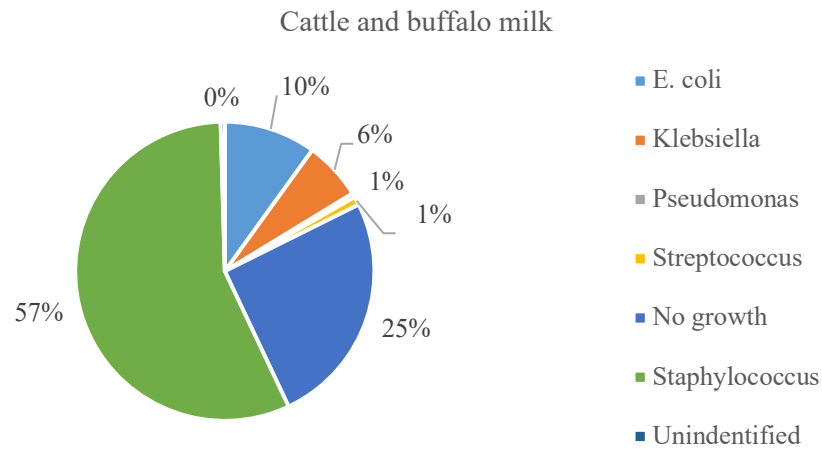


Figure 6: Isolates from cattle and buffalo milk

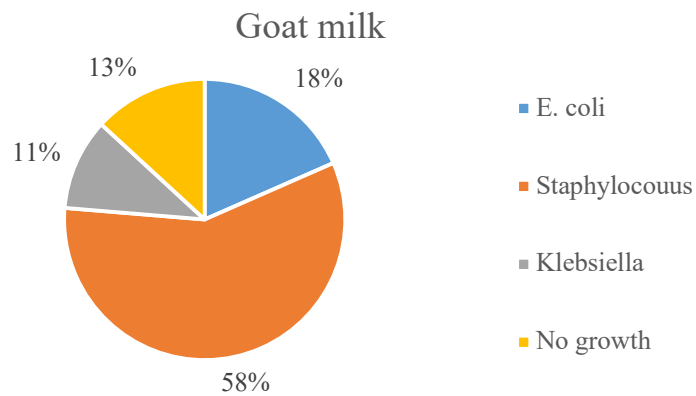


Figure 7: Isolates from goat milk

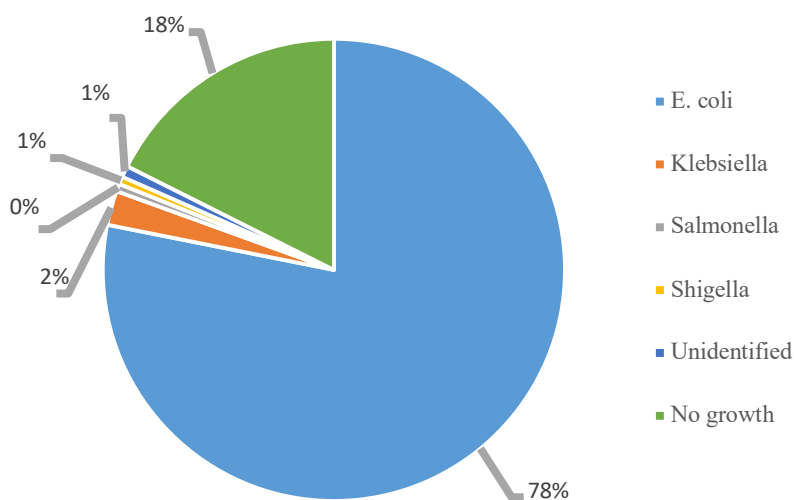


Figure 8: Isolates from poultry liver

4.4 Serology:

During the fiscal year 2081/82 **most** of the serum samples collected were from goats, cattle, buffalo and swine. Those serum samples were collected for seromonitoring of FMD in cattle and buffalo, PPR in goat, Classical Swine Fever in swine and other diseases like Toxoplasmosis and Q Fever detection from serum. In total 2540 serum samples were collected from above mentioned animal species. Salmonella and Mycoplasma (Plate Agglutination Test-PAT) and rapid test of other for poultry disease was conducted in the laboratory. Some of the samples were forwarded to Central Veterinary Laboratory, Tripureshwor, Kathmandu and FMD and TADs Investigation Laboratory, Kathmandu for further testing.

4.5 Hematology:

During the fiscal year 2081/82, hematology unit received 69 samples from buffalo, cattle and dog. Out of 69 blood samples received, 32 were from cattle, 35 from dog and 2 from buffalo from three municipality of Kailali district and one municipality of Bajhang district as shown in the table below. The samples were tested for CBC and blood parasites using Giemsa stain.

Table: Blood samples processed at Veterinary Laboratory, Dhangadhi (FY 2081/82)

SN	District	Local Level	Buffalo	Cattle	Dog	Total
1	Kailali	Dhangadhi Sub-Metropolitan City		7	30	37
2	Kailali	Godawari Municipality		25	4	29
3	Kailali	Lamkichuha Municipality			1	1
4	Bajhang	Bungal Municipality	2			2
Total			2	32	35	69

4.6 Major Disease Event:

During the fiscal year 2081/82 different disease events were reported to the laboratory. Field investigation, rumor verification and sample collection, testing and reporting was done by the laboratory on its own or with the support of central level laboratories. Based on the disease events reported and investigated major events and diagnosis are reported below.

4.6.1 Rabies

District	Local level	RDT (Rabies)			*FAT (Rabies)		
		Total test	Neg	Pos	Total test	Neg	Pos
Achham	Dhakari Rural Municipality	6	2	4	0	0	0
	Mangalsen Municipality	1	0	1	1	0	1
Bajhang	Jaya Prithvi Rural Municipality	1	0	1	0	0	0
	Kedarsyu Rural Municipality	1	0	1	1	0	1
	Thalara Rural Municipality	1	0	1	0	0	0
Banke	Janaki Rural Municipality	1	0	1	0	0	0
Doti	Aadarsha Rural Municipality	5	1	4	4	0	4
	Dipayal Silgadhi Municipality	3	1	2	2	1	1
Kailali	Bardagoriya Rural Municipality	6	2	4	0	0	0
	Dhangadhi Sub Metropolitan	31	6	25	12	2	9
	Gauriganga Municipality	10	2	8	3	1	2
	Ghodaghodi Municipality	15	4	11	4	1	2
	Godawari Municipality	7	2	5	2	0	2
	Janaki Rural Municipality	3	0	3	1	0	0
	Joshipur Rural Municipality	3	1	2	0	0	0
	Kailari Rural Municipality	4	0	4	1	1	0

District	Local level	RDT (Rabies)			*FAT (Rabies)		
		Total test	Neg	Pos	Total test	Neg	Pos
	Lamkichuha Municipality	4	1	3	2	0	1
	Tikapur Municipality	15	2	13	8	1	6
Kanchanpur	Bedkot Municipality	4	0	4	0	0	0
	Belouri Municipality	13	3	10	3	1	1
	Bhimdutta Municipality	21	4	17	5	1	2
	Punarbans Municipality	10	1	9	3	0	3
	Shuklaphanta Municipality	5	2	3	3	0	2
Grand Total		170	34	136	55	9	37

*FAT test results are incomplete

4.6.2 PPR

SN	District	Location	Total test	Animal type	Remarks
1	Achham	Saphebagar Municipality	1	Goat	Negative
2	Baitadi	Pancheshwor Rural Municipality	1	Goat	Positive-PPR
3				Goat	Positive-PPR
4				Goat	Positive-PPR
5	Darchula	Sailyasikhar Municipality	1	Goat	Negative
6	Doti	Dipayal Silgadhi Municipality	1	Goat	Negative
7			1	Goat	Negative
8		Jorayal Rural Municipality	1	Goat	Negative
9			1	Goat	Negative
10	Kailali	Ghodaghodi Municipality	1	Goat	Negative

4.6.3 FMD

SN	District	Location	Total test	Animal type	Remarks
1	Kanchanpur	Laljhadi Rural Municipality	1	Cattle	Positive-FMD serotype A
2			1	Cattle	Positive-FMD serotype A
3			1	Goat	Negative- FMD serotype A, O, Asia 1
4	Kanchanpur	Belouri Municipality	1	Cattle	Positive-FMD serotype A
5			1	Cattle	Positive-FMD serotype A
6			1	Cattle	Positive-FMD serotype A
7	Kanchanpur	Shuklaphanta Municipality	1	Cattle	Negative- FMD serotype A, O, Asia 1
8			1	Cattle	Positive-FMD serotype A
9			1	Cattle	Negative- FMD serotype A, O, Asia 1
10	Kanchanpur	Beldandai Rural Municipality	1	Cattle	Negative- FMD serotype A, O, Asia 1
11			1	Goat	Negative- FMD serotype A, O, Asia 1
12	Baitadi	Dogada Kedar Rural Municipality	1	Cattle	Positive- FMD Serotype O
13			1	Cattle	Positive- FMD Serotype O
14			1	Cattle	Negative- FMD serotype A, O, Asia 1
15			1	Buffalo	Positive- FMD Serotype O

16	Kailali	Bhajani Municipality	1	Buffalo	Positive- FMD serotype O
17			1	Buffalo	Positive- FMD serotype O

4.6.4 Lumpy Skin Disease

SN	District	Location	Total test	Animal type	Remarks
1	Baitadi	Dogadakedar Rural Municipality	1	Buffalo	Negative
2		Pancheshwor Rural Municipality	1	Buffalo	Negative
3			1	Buffalo	Negative

4.6.5 ASF/CSF

SN	District	Location	Total test	Animal type	Remarks
1	Achham	Mangalsen Municipality	1	Pig	Negative
2	Doti	Jorayal Rural Municipality	1	Pig	Positive- ASF (only RDT)
3	Kailali	Dhangadhi Sub-Metropolitan City	1	Pig	Positive- ASF
4			1	Pig	Negative
5			1		Positive- ASF
6		Gauriganga Municipality	1	Pig	Positive- ASF
7			1	Pig	Positive- ASF
8				Pig	Positive- ASF
9			1	Pig	Negative
10		Ghodaghodi Municipality	1	Pig	Positive- ASF
11			1	Pig	Negative
12			1	Pig	Negative
13			1	Pig	Negative
14		Godawari Municipality	1	Pig	Negative
15		Kailari Rural Municipality	1	Pig	Positive- ASF (only RDT)
16	Kanchanpur	Krishnapur Municipality	1	Pig	Negative
17			1	Pig	Negative
18	Shuklaphanta National Park	Shuklaphanta National Park	1	Wild boar	Negative
19	Bardiya	Rajapur Municipality	1	Pig	Negative

4.6.6 Glanders

SN	District	Location	Total test	Animal type	Remarks
1	Kailali	Janaki Rural Municipality	1	Horse	Positive- Glanders
2			1	Horse	Positive- Glanders
3			1	Horse	Positive- Glanders
4	Kanchanpur	Bedkot Municipality	1	Horse	Positive- Glanders
5			1	Horse	Positive- Glanders

4.6.7 Enterotoxaemia toxin detection

SN	District	Location	Total test	Animal type	Remarks
1	Achham	Saphebagar Municipality	1	Goat	Positive- Enterotoxaemia
2	Doti	Jorayal Rural Municipality	1	Goat	Negative
3			1	Goat	Negative
4			1	Goat	Positive- Enterotoxaemia Type A and D

4.6.8 Q fever

SN	District	Location	Total test	Animal type	Remarks
1	Darchula	Sailasikhar Municipality	1	Goat	Positive: Coxiella (PCR)
8	Doti	Jorayal Rural Municipality	1	Goat	Negative

4.6.9 PRRS

SN	District	Location	Total test	Animal type	Remarks
1	Kailali	Ghodaghodi Municipality	1	Pig	Positive: PRRS-NA (PCR)
2	Bardiya	Rajapur Municipality	1	Pig	Negative: PRRS-NA and EU

4.6.10 Avian Influenza (HPAI/LPAI)

SN	District	Local Level	Total test	Species	LPAI test result	HPAI test result
1	Bajhang	Jay Prithvi Municipality	1	Commercial Broilers	Positive	Negative
2	Kailali	Dhangadhi Sub Metropolitan	1	Commercial Broilers	Positive	Negative
3			1	Commercial Broilers	Positive	Negative
4			1	Commercial Broilers	Positive	Negative
5			1	Giriraj	Positive	Negative
6			1	Commercial Broilers	Positive	Negative
7		Ghodaghodi Municipality	1	Local	Positive	Negative
8		Godawari Municipality	1	Commercial Broilers	Positive	Negative
9			1	Commercial Broilers	Positive	Negative
10			1	Commercial Broilers	Positive	Negative
11		Lamki Chuha Municipality	1	Commercial Layers	Positive	Negative
12	Kanchanpur	Krishnapur Municipality	1	Commercial Broilers	Positive	Negative
13		Laljhadi Rural Municipality	1	Commercial Broilers	Positive	Negative
14	Surkhet	Chaukune Rural Municipality	1	Commercial Broilers	Positive	Negative

4.6.11 Toxoplasma Antibody ELISA test result

SN	District	Location	Total sample	Test conducted	Species	Result
1	Kanchanpur	Bedkot Municipality	123	103	Goat	Ab positive: 26
2		Dodhara Chadani Municipality	81	81	Goat	Ab positive: 41

4.7 Sero-monitoring

Seromonitoring for the evaluation of vaccines used under National Animal Disease Control Program against PPR, CSF, FMD was conducted. Serum samples were collected from different districts following standard sampling plan as advised by CVL. At least three local level were selected from each district randomly, and furthermore at least three wards were selected randomly from each local level and samples were collected randomly from atleast three household from vaccinated animals.

Table: Number of samples collected for seromonitoring

S.N.	Disease	Sample collected	Remarks
1	PPR	1804	Samples were collected by VL Dhangadhi and tested at VL Dhangadhi for PPR and FMD & TADs Laboratory, Budhanilkantha for CSF and FMD.
2	FMD	401	
3	CSF	52	
	Total	2257	

Result of Antibody ELISA test in samples from seromonitoring in vaccinated goat against PPR

District	Local Level	Sample tested	Sero-pos %	
			Local level	District
Kailali	Godawari Municipality	95	73.68	65.38
	Gauriganga Municipality	95	34.74	
	Kailari Rural Municipality	95	77.89	
	Janaki Rural Municipality	79	77.22	
Kanchanpur	Punarbans Municipality	97	82.47	83.95
	Belouri Municipality	96	78.13	
	Dodhara Chandani Municipality	131	89.31	
Bajhang	Bitharchid Rural Municipality	238	42.86	42.86
Darchula	Marma Rural Municipality	200	83.00	83.00
Baitadi	Patan Municipality	120	53.33	53.33
Bajura	Badimalika Municipality	219	93.12	93.12
Achham	Chaurpati Rural Municipality	79	88.61	88.61
Doti	Jorayal Rural Municipality	167	73.65	73.65
Dadeldhura	Amargadhi Municipality	93	77.42	77.42
Total		1804	72.66	

Result of Antibody ELISA test in samples from pig vaccinated against CSF

District	Local Level	No. of sample collected	No. of test conducted	Sero-pos %
Doti	Sikhar Municipality	52	52	94.2
Total		52	52	94.2

Result of Antibody ELISA test in samples from cattle and buffalo vaccinated against FMD

District	Total sample	Sero-positive % of FMD Type O	Sero-positive % of FMD Type A	Sero-positive % of FMD Type Asia 1
Kailali	268	37	21	9
Kanchanpur	133	86	89	62

Vaccine Bank Management:

VL Dhangadhi maintains vaccine bank against major diseases to be used in the sudurpaschim province. During the fiscal year vaccines for different diseases were provided to all districts of the province as shown in table below.

Table: Distribution from Veterinary Laboratory, Dhangadhi (FY 2081/82)

Particulars	PPR (doses)	FMD (doses)	ND (doses)	CSF (doses)	HS-BQ (doses)	Rabies (doses)	LSD (doses)
Vaccine dispatched	10,65,500	4,96,150	-	4,520	0	11,090	45,200
Vaccine stock	4,93,800	7,28,750	-	84,480	49,000	910	38,800



Government of Nepal
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