

Annual Epidemiological Bulletin

Western Parts of Nepal

2076/077 (2019/020)



Government of Nepal

Ministry of Agriculture and Livestock Development

Department of Livestock Services

Veterinary Laboratory, Pokhara

Ramghat-12, Pokhara, Kaski

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Fiscal Year 2076/077



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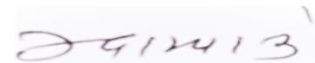
Preface

It is my immense pleasure to bring yearly veterinary epidemiological bulletin of western parts of Nepal. The bulletin reports on the epidemiological status of various poultry and livestock diseases in the western 17 districts based on the samples received and tested from the farmers and VHLSEC of Gandaki and province 5. District, month and season wise incidences have been incorporated for better understanding of the outbreak of diseases in different animal population.

The basis of disease diagnosis is history, postmortem examination, rapid diagnostic tests (RDT), rapid plate agglutination tests (PAT), microscopic examination, culture and biochemical tests, ELISA, PCR depending upon the nature of the disease investigation whether the causative organism is bacterial, parasitic, viral or managerial type.

Some disease diagnosis are still made based on history and post mortem examination e.g., mycotoxicosis. The exact laboratory test to confirm as mycotoxicosis due to a particular type of toxin (aflatoxin, fumisin, ochratoxin, zeralenone etc) by either ELISA or HPLC has not been established yet. These types of epidemiological reporting may not be true representation of livestock disease condition in this area. As exact diagnosis requires laboratory confirmation, I would like to strongly recommend strengthening the laboratory facilities, manpower as well as accreditation of laboratory. This would eventually lead to authenticity of the data and global acceptance of the report. A standard protocol for lab based diagnosis, preferably OIE protocol, would be highly authentic to be implemented in all the veterinary laboratories of Nepal.

Finally, I would like to thank all the farmers and government bodies of this area which dispatched the sample to this laboratory for the accurate disease diagnosis. I am also grateful to all the dedicated staffs of this laboratory who continuously works for the betterment of the farmers. Any suggestions and constructive criticism regarding this publication is highly appreciated.



Dr. Kedar Raj Pande

Lab Chief

Veterinary Laboratory Pokhara

Abbreviations

AI: Avian Influenza

AST: Antibiotic Sensitivity Test

CMT: California Mastitis Test

CRD: Chronic Respiratory Disease

CCRD: Complicated Chronic Respiratory Disease

ELISA: Enzyme Linked Immune Sorbent Assay

Ca: Calcium

Fe: Iron

FMD: Foot and Mouth Disease

HA: Haemagglutination

HI: Haemagglutination Inhibition

HPLC: High Phase Liquid Chromatography

IBD: Infectious Bursal Disease

IB: Infectious Bronchitis

LS: Livestock Section

MP: Municipality

MT: Mycotoxicosis

ND: New Castle Disease

OIE: World Organization of animal Health

PCR: Polymerase Chain Reaction

PPR: Peste des Pestes Ruminants

PAT: Rapid Plate Agglutination Test

P: Phosphorous

RDT: Rapid Diagnostic Test

RBPT: Rose Bengal Plate Agglutination Test

RM: Rural Municipality

SOP: Standard Operating Procedure

SLST: Sodium Lauryl Sulfate Test

TP: Total protein

VL: Veterinary Laboratory

VHLSEC: Veterinary Hospital and Livestock Service Expert Center

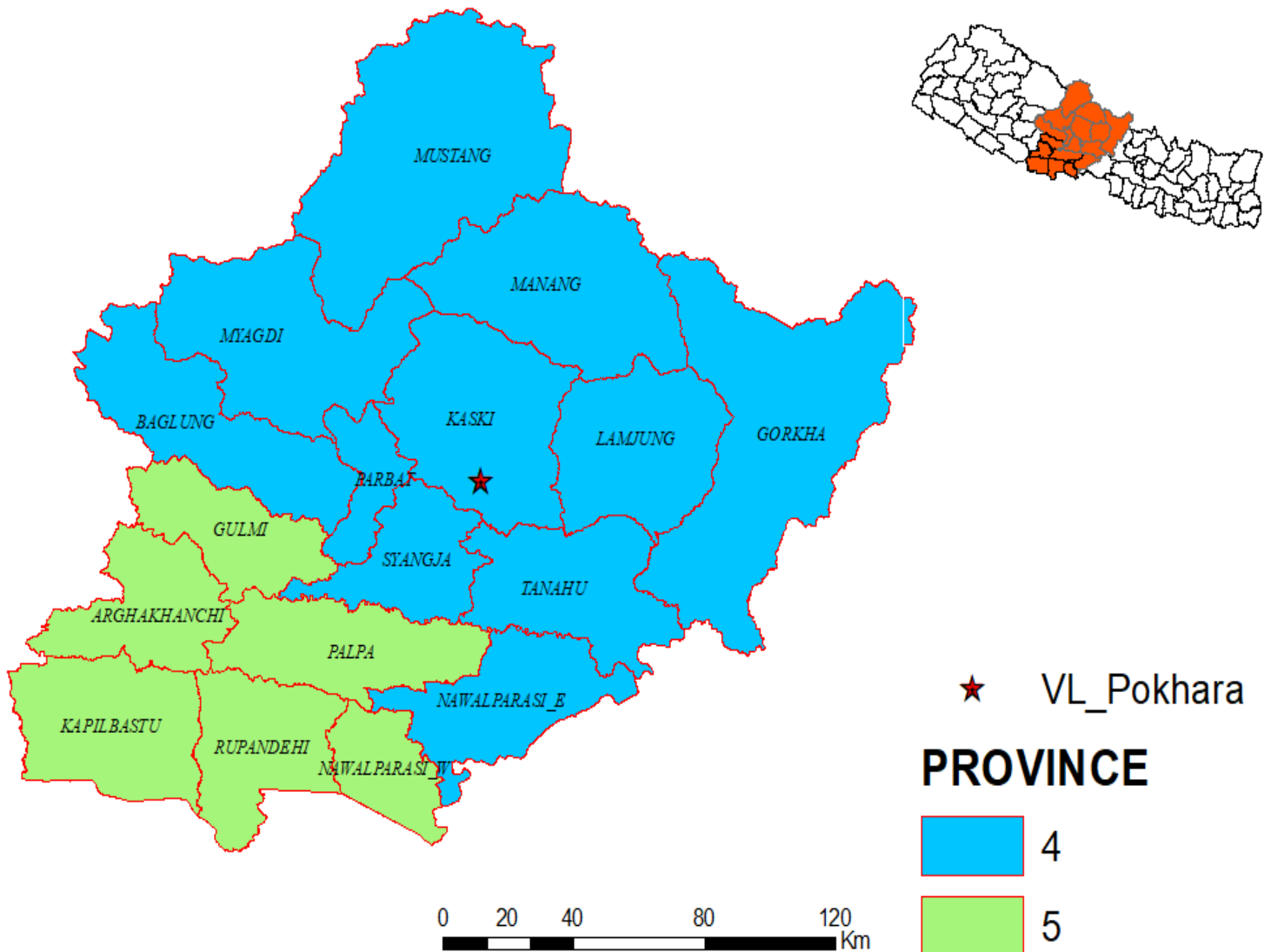
Overview of Laboratory

Introduction

Veterinary Laboratory, Pokhara was established in 2049 B.S. as a Regional Veterinary Laboratory with the objective of disease diagnosis and outbreak investigation in sixteen districts of western development region at that time. With the shift to federalism, this laboratory belongs to federal government and provides services to 11 districts of Gandaki province and 6 districts of Province 5. The mission of the Veterinary Laboratory, Pokhara is to promote the health of livestock, poultry and companion animals and to ensure safe animal products for the consumer by assisting Veterinary Hospital and Livestock Service Expert Centers (VHLSEC) of these provinces and Animal Health Sections (AHS) of local levels, veterinarians, clients, and others responsible for animal health in the detection and prevention of disease by conducting responsible investigation on animal diseases and providing accessible, accountable, timely, and accurate diagnostic services. The laboratory is responsible for food safety, outbreak investigation, formulating disease control strategy, prepare epidemiological profile of livestock and poultry diseases and maintain and disseminate the regional epidemiological information database on animal health in the regional as well as in the national networks.

In present context, commercialization in Livestock and poultry production has increased the challenge for precise and prompt diagnosis of different animal and poultry disease. For this specific reason molecular basis of disease diagnosis has been set up at Veterinary Laboratory. Currently we have PCR facility for Foot and Mouth disease (FMD) and PPR disease diagnosis.

Working area of Veterinary Laboratory Pokhara



Mission

The mission of the VL, Pokhara is to promote the health of livestock, poultry and companion animals and to ensure safe animal products for the consumers by assisting Veterinary Hospital and Livestock Service Expert Center (VHLSEC), Livestock Service (LS) of MP and RM veterinarians,

clients and others responsible for animal health in the detection and prevention of disease by conducting responsible investigation on animal disease and providing accessible, accountable, timely and accurate diagnostic services.

- ✚ To provide accessible, timely and accurate diagnostic services to the livestock and poultry farmers and to veterinarians, veterinary technicians and their owners in the region.
- ✚ To conduct diagnostic examinations, record results, report information, and assist in the interpretation of results to submitting local level, veterinarians, and veterinary technicians
- ✚ To investigate disease epidemics in the region and assist, advice and support local level to control them.
- ✚ To prepare epidemiological profile of livestock and poultry diseases and maintain and disseminate the regional epidemiological information database on animal health in the region as well as in the national networks.
- ✚ To investigate relatively important livestock diseases in the region and formulate control measures for the same with wider consultation to the experts.
- ✚ To monitor and report the animal diseases incidences as well as disease that are transmissible from animal to humans (zoonosis).
- ✚ To supervise and assist in diagnostic services to basic and primary laboratories based at local level of the region.
- ✚ To conduct and support the laboratory and animal health related training programs for the para-vets in the region.

Objectives

The main objective of this laboratory is livestock disease control and eradication programs in the region.

Major Laboratory Facilities of VL, Pokhara

VL, Pokhara, located at Ramghat-12, the center of Pokhara city, provides diversified veterinary laboratory test facilities for the farmers, private veterinary practitioners and VHLSEC of this region. It mainly tests the following categories of the samples under mainly 3- sections;

1. Pathology

- A. **Parasitological Unit:** Parasitological unit tests for internal parasites through microscopic examination of faecal samples. Skin scrappings are also tested for the presence of external parasitic infection e.g., Mange, Sarcopties. It also conducts blood parasite test using thick and thin blood smear examination e.g., *E. canis*, *B. canis*, Trypanosomiasis etc.
- B. **Post-mortem Unit:** Pathology unit mainly perform PME on various species of animals and collect appropriate samples for the microbiological, parasitological and molecular biological examination. The unit performs necropsy of morbid and dead birds and animals.
- C. **Biochemistry Unit:** Biochemistry unit analyze mainly serum for the estimation of Ca, P, Mg, TP, Fe, Albumin etc. It is also performing the urine tests by estimating Albumin, Bilirubin, ketone bodies, urobilinogen etc. using dipstick test kit.
- D. **Hematology Unit:** This unit is providing routine hematological examinations of all animals and birds using automated hemato-analyzer.

2. Microbiology

Microbiological unit tests diversified samples like milk, tissues, blood, aspirated fluids, and tissues etc. Both aerobic and anaerobic culture facilities are available.

- A. **Bacteriology and Mycology:** It also perform identification of the bacterial and fungal organisms using various biochemical tests, staining, morphology etc. The microbiology unit also performs antibiotic susceptibility test and advice for the appropriate antibiotic for the treatments.
- B. **Serological Unit:** Serological unit of VL, Pokhara mainly performs RBPT for *Brucella*, Penside test for PPR, PAT test for *Mycoplasma* and *Salmonella* as well as ELISA for various viral and bacterial diseases of livestock and poultry.
- C. **Virology:** In virology unit, the laboratory is capable for HA/HI tests.

- 3. **Molecular Biology:** Molecular Biology section is performing PCR test for FMD and PPR disease of ruminants using conventional PCR machine.

Poultry Diseases

Out of the total cases presented, 80% were broilers, 12% layers and remaining 8% were local, giriraj, fighter and turkey. Most of the cases (85%) recorded were from small farmers (<2000 birds), followed by 10% medium farmers (2000-5000 birds) and remaining 5% large farmers (>5000 birds). Majority of the cases were from Kaski (81%) followed by Tanahun (9.7%), Syangja (5.7%) and other districts (3.6%) as shown in **Figure-1**.

Poultry Diseases diagnosed on the basis of PME (March, 2018-Feb, 2019)										
	Kaski	Tanahun	Syangja	Parbat	Baglung	Myagdi	Lamjung	Nawalparasi	Gulmi	Total
March	257	6	18		3	2	1	1		288
April	324	19	19	8	8	7	5			390
May	196	103	9	1	7	5	1			322
June	276	30	19	6	6	5	4	1		347
July	185	20	22	2	1	6	4			240
August	202	18	27		1	1				249
September	253	29	16	2	1	1		1	2	305
October	233	13	15	2	4	1				268
November	250	20	6		1	2	1			280
December	288	28	12	3	3	3	0	0		337
January	251	37	14	2	1	2	6	0		313
February	343	42	18	2	1	3	3	0		412
Total cases	3058	365	195	28	37	38	25	3	2	3751

(This data was presented @SAADC-2019)

Month wise prevalence of important poultry diseases (March, 2018-Feb, 2019)

	Kaski	Tanahun	Syangja	Parvata	Baglung	Myagdi	Palpa	Gorkha	Lamjung	Nawalparasi	Gulmi	Total
PM Cases	3058	365	195	28	37	38			25	3	2	3751
Salmonellosis	131	23	23	0	0	0			1	0	0	178
Mycoplasmosis	168	20	14	0					2			204
IBD	193	15	16	3	0	3		1	2			233
ND	36	8	7	2	1	3		1				58
AIV	25	1	0	2	1		1					30
Coccidiosis	473	55	31	5	4	7		1	7			583
Total Cases	4084	487	286	40	43	51	1	3	37	3	2	5037

(This data was presented @SAADC-2019)

Graphical representation of different poultry cases (March, 2018-Feb, 2019)

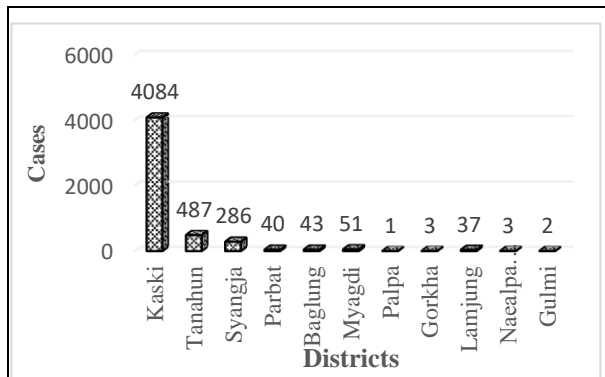


Figure 1: Poultry case flow pattern from different districts, showing majority of cases (4084) from Kaski district.

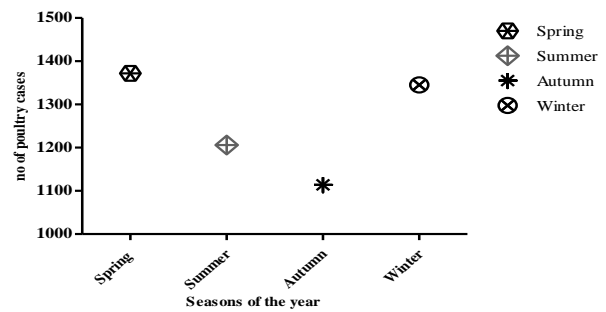


Figure 2: Seasonal case flow pattern of poultry diseases, showing lowest case flow pattern during Autumn. The overall disease case flow was found in the spring season (27.24%), followed by winter (26.70%), summer (23.94%) and autumn (22.12%)

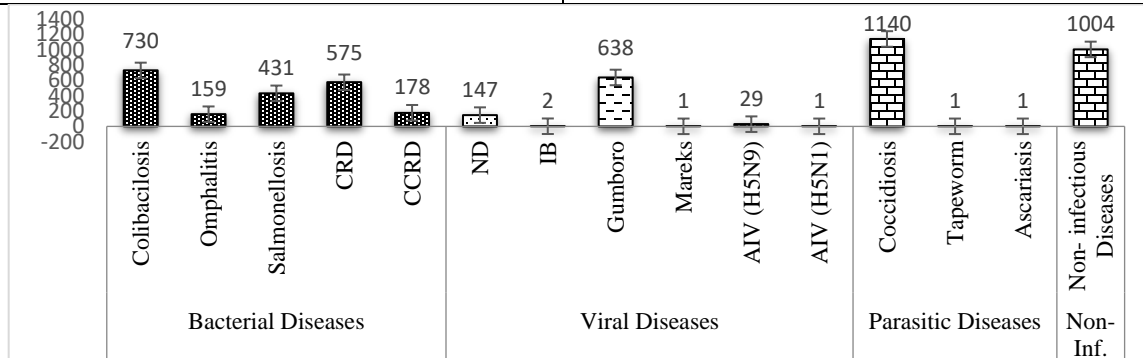


Figure 3: Occurrence of different poultry diseases; showing highest prevalence of bacterial (41.16%), followed by parasitic (22.67%), non-infectious (19.93%) and viral (16.24%) cases.

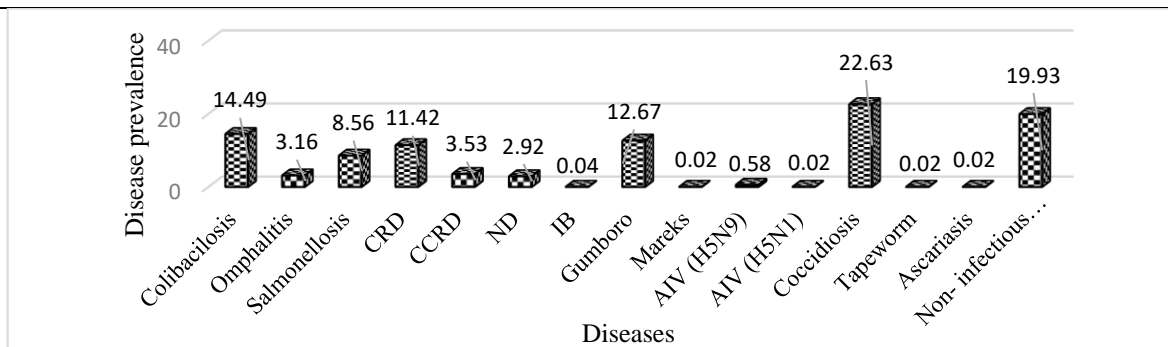


Figure 4: Prevalence of different poultry diseases; colibacillosis (14.49%) and CRD (11.42%), coccidiosis (22.63%) and Gumboro (12.67%) were major diseases in their respective disease categories of bacterial, parasitic and viral.

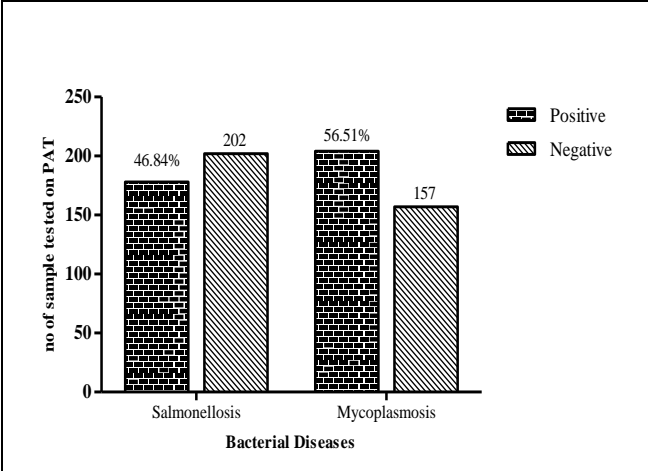


Figure 5: Sero-prevalence of Salmonellosis & Mycoplasmosis based on rapid PAT, showing the prevalence of *Salmonella* and *Mycoplasma* infection were 46.84% and 56.51% respectively

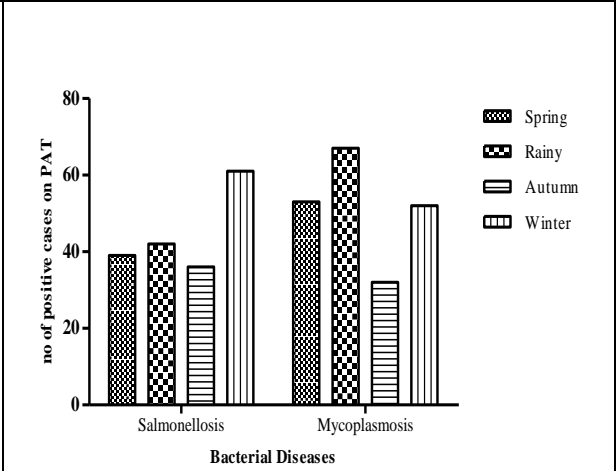


Figure 6: Seasonal occurrence of Salmonellosis & Mycoplasmosis, showing the highest prevalence of *Salmonella* in winter season 61 (34.27%) and *Mycoplasma* in rainy season 67 (32.84%)

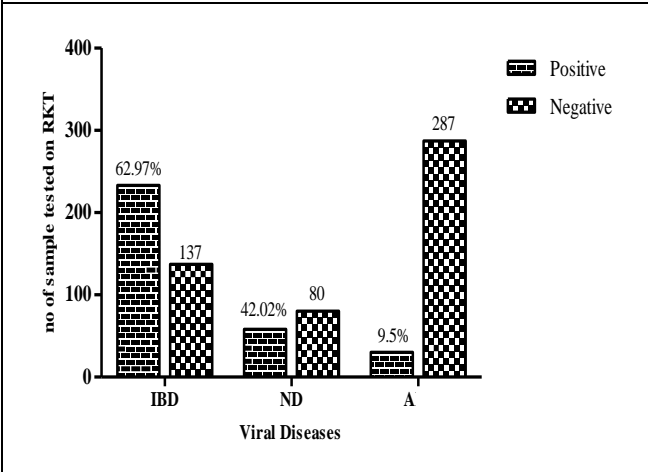


Figure 7: Different viral diseases positive on RKT; the prevalence of IBD, ND and AI was found 62.97%, 42.02% and 9.5% respectively on the RKT

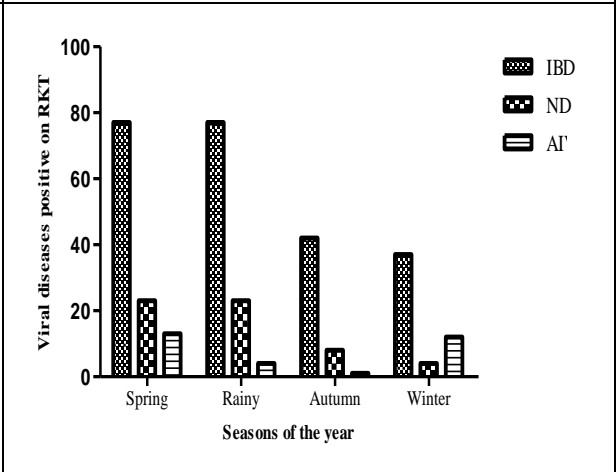


Figure 8: Seasonal variation of IBD, ND and AI diseases, showing the higher cases of IBD, ND in spring and rainy season whereas AI in spring & winter

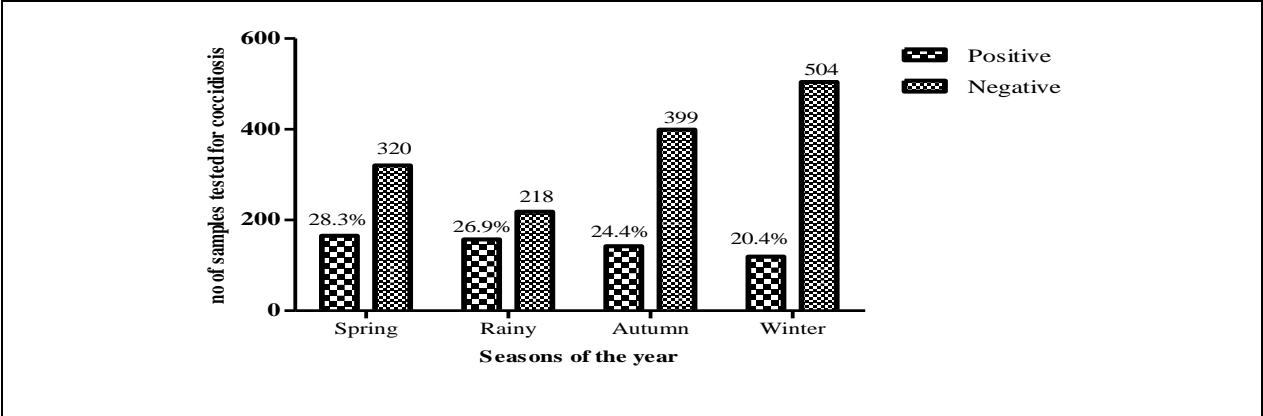


Figure 9: Seasonal variation of caecal coccidiosis on microscopic examination. Out of the 2024 caecal scrapings taken from the chicken of more than two weeks of age and tasted for caecal coccidian oocyst, 583 (28.8%) were found positive. The prevalence of coccidiosis was found more in humid spring season (28.3%), followed by rainy (26.9%), autumn (24.4%) and winter (20.4%)

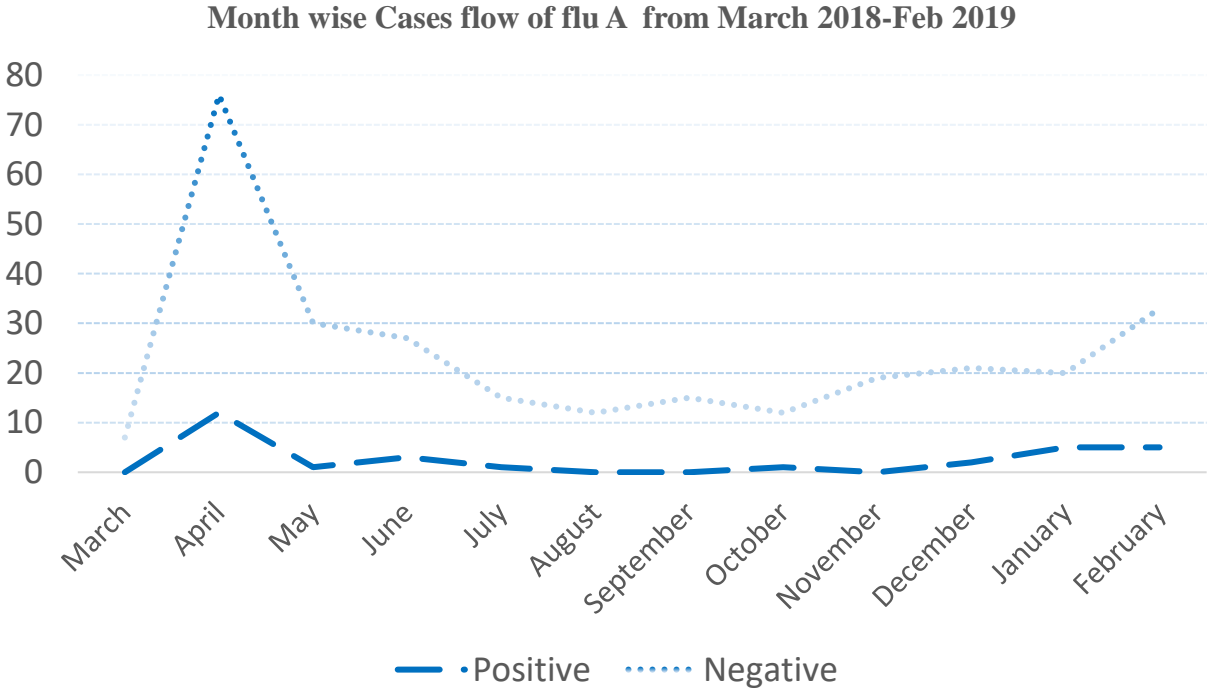


Figure 10: Prevalence of Flu A cases (among them two were H5 in Madi, Kaski and Nawalpur)

Sub- Clinical Mastitis Screening test

94 milking animals were randomly selected, out of which 50 were Jx, 37 Hx, 5 local cross bred and 2 were Hariyana. CMT was performed at the farmer's shed and ten ml of milk sample from each quarter was collected in a sterile bottle from the animal infected sub-clinically. They were numbered and marked as right front (RF), left front (LF), right hind (RH) and left hind (LH). All the samples brought to the laboratory were subjected to cultural examination on Nutrient agar, Mac Conkey agar and EMB media. They were incubated at 37° C for 24 hours. Cultural isolates were identified on the basis of colony characteristics, Gram's staining and different biochemical tests; IMViC, Oxidase, Catalase and Motility.

Table 1 Screening of milking animals for SCM based on CMT

Screening Result; n (%)		Quarter wise distribution of SCM			
Positive	Negative	Teat Location	Positive(n)	Negative (n)	Total Prevalence (%)
59 (62.77)	35 (37.23)	RF	29	65	30.85
		LF	37	57	39.36
		RH	28	66	29.79
		LH	20	74	21.28
Total: 94 milking cows					

Abbr.: RF, Right Front; LF, Left Front; RH, Right Hind; LH, Left Hind

Table 2 Distribution of different types of subclinical mastitis on animal and quarter basis

Culture Report	No of animals (94) n (%)	No of quarters (376) n (%)
Coliform mastitis	34 (57.63)	114 (30.32)
<i>Staphylococcus</i> mastitis	7 (11.86)	
<i>Streptococcus</i> mastitis	5 (8.47)	
No growth	13 (22)	

(This data was presented @ SAADC-2019)

Prevalence Internal Parasite of migratory flocks

Study Area: Machhapuchhre Rural Municipality, Kaski

Gharapjhong Municipality, Mustang

Study Population:

Address	Species		Age		Sex	
	Goat	Sheep	>1 yr	<1Yr	Male	Female
Machhapuchhre-5, Kaski	48	78	99	27	39	87
Mustnag-4, Gharapjhong	25	32	54	3	3	54
Mustnag-5, Gharapjhong	25	17	33	9	6	36

Results:

Strongyles: 20

Strongyloides: 22

Moneiza: 27

Eimeria: 26

Trichuris: 5

Fasciola: 19

Paramphistomes: 4

Total Prevalence: 58/225 = 25.77%

Sub-clinical mastitis test in the commercial cattles of Suklagandaki, Tanahun

Prevalence of Sub-clinical mastitis:

SLST Positive				Negative
Trace	+	++	+++	
3	2	12	9	19

Causative Organisms:

<i>Streptococcus spp</i>	<i>Staphylococcus Spp</i>	<i>E. coli</i>	<i>Bacillus spp</i>	<i>Pasturella Spp</i>	No growth
6	1	9	1	1	6

Antibiotic Susceptibility Test (Diameter mm):

Mos	Enrofloxacin	Tetracycline	Ciprofloxacin	Gentamicin	Ceftriaxone
<i>Streptococcus spp</i>	32	31	32	18	16
	32	30	32	17	16
	30	28	31	18	16
	31	26	31	18	16
	28	31	32	20	17
	29	27	20	18	23
<i>E.coli</i>	30	28	31	18	17
	30	27	30	16	16
	30	18	28	16	18
	27	22	27	26	15
	26	25	24	18	19
	30	28	31	18	17
	30	27	30	16	16
	30	27	30	16	16
<i>Staphylococcus Spp</i>	28	26	27	15	15
<i>Pasturella Spp</i>	28	26	27	15	15
<i>Bacillus spp</i>	24	27	21	17	20

PPR outbreak conditions
Samples tested by Penside and Rapid kit (ID-Vet)

Districts	Positive	Negative	Total Test
F/Y 073/074			
Kapilvastu	6	3	9
Kaski	1	12	14
Tanahun	3	0	3
Nawalparasi	8	0	8
Mustang	6	14	20
F/Y 074/075			
Kaski	2	14	20
Syangja	4	0	4
Gorkha	2	12	14
Nawalparasi	0	9	9
F/Y 075/076			
Kaski	2	14	20
Tanahun	4	0	4
Rupandehi	2	12	14
Kapilvastu	0	9	9
Lamjung	1	0	1
Parbat	0	1	1
F/Y 076/077			
Kaski	11	13	24
Tanahun	0	8	8
Rupandehi	13	5	18
Kapilvastu	2	5	7
Lamjung	1	0	1
Parvat	1	1	2
Myagdi	0	2	2
Palpa	0	4	4

PPR Sero-monitoring

- ▶ Serum from sheep and goat was collected for estimation of efficacy of vaccination program (PPR homologous vaccine).
- ▶ The number of samples collected for sero-monitoring of PPR from different districts of Gandaki and province-5 is presented below:

District	Total sample tested	Positive	Negative	Seropositive (%)
Lamjung	90	73	17	81.11
Syangja	65	65	27	70.65
Tanahun	142	119	23	83.80
Baglung	63	38	25	79.33
Gorkha	72	56	16	77.78
Kaski	101	86	15	85.15
Myagdi	93	76	17	81.72
Parbat	77	60	17	68.97
Palpa	92	75	17	81.52
Gulmi	102	85	17	83.33
Rupandehi	125	102	23	81.6
Kapilbastu	121	96	25	79.33
Arghakachhi	92	76	16	82.61
Nawalparasi	97	82	15	84.54
Total	1332	1089	243	81.76

Rabies Cases (F/Y 076/077)

SN	Species	Address	Type of test	Remarks
1	Canine	Byas-3, Tanahun	Rapid Ag test	Negative
2	Buffalo calf	Bandipur, Tanahun	Rapid Ag test	Positive
3	Dog	Byas, Tanahun	Rapid Ag test	Positive
4	Cattle	Machhapuchhre-7, Kaski	Rapid Ag test	Negative
5	Buffalo	Annapurna-4, Kaski	Rapid Ag test	Positive
6	Dog	Pokhara-13, Arva	Rapid Ag test	Positive
7	Goat Cattle	Xorepatan-17, Kaski	Rapid Ag test	Negative
8	Mongoose	Pokhara-25, Kaski	Rapid Ag test	Negative
9	Rat	Pokhara-7, Airport, Kaski	Rapid Ag test	Negative
10	Cat	Pokhara-9, kaski	Rapid Ag test	Negative
11.	Dog	Pokhara-14, Kaski	Rapid Ag test	Positive
12.	Swine	Malika Ga.Pa.-6, Myagdi	Rapid Ag test	Positive

Outbreak of other different livestock diseases (076/077)

S.N	Address	Species/ Breed	Sample Received	Diagnostic Method	Disease	Month
1.	Pokhara-10, Kaski	Dog	SS	Microscopic Examination	Sarcoptes mite	2076/9/22
2.	Byas-1, Tanahun	Pig	Carcass	Impression smear	Anthrax	
3.	Pokhara-7, Kaski	Dog	Blood	Microscopic examination	Trypanosomiasis	2076/07/21
4.	Kawasoti Na. Pa, Nawalpur	Cattle	Urine Blood	Microscopic examination RBPT	Leptospirosis Brucellosis	2076/07/21
5.	Tanahun	Cattle	Blood	RBPT	Brucellosis	
6.	Pokhara-14, Kaski	Pig	Carcass	Impression smear	Anthrax	076/05/01
7.	Pokhara-16, Kaski	Pig	Carcass	Impression smear	Anthrax	076/05/09
8.	Kawasoti-8, Nawalpur	Cattle	Serum	Rapid Ab-Kit test RBPT	Leptospirosis: +ve Brucellosis: -ve	077/01
9.	Kawasoti-8, Nawalpur	Cattle	Serum	Rapid Ab-Kit test RBPT	Leptospirosis: +ve Brucellosis: + ve	077/01
10.	Pokhara-12, Dhikalethar	Dog	Blood	Rapid Ag-kit test	Trypanosomiasis	077/02/20
11.	Kawasoti-8, Nawalpur	Cattle (Jx)	Serum	Rapid Ab-Kit test RBPT	Leptospirosis: +ve Brucellosis: - ve	077/02/32
12.	Kawasoti-8, Nawalpur	Cattle (Jx)	Serum	Rapid Ab-Kit test RBPT	Leptospirosis: -ve Brucellosis: - ve	077/02/32
13.	Kawasoti-8, Nawalpur	Cattle (Jx)	Serum	Rapid Ab-Kit test RBPT	Leptospirosis: -ve Brucellosis: - ve	077/02/32
14.	Kawasoti-8, Nawalpur	Cattle (Jx)	Serum	Rapid Ab-Kit test RBPT	Leptospirosis: +ve Brucellosis: - ve	077/02/32
15.	Kawasoti-8, Nawalpur	Cattle (Jx)	Serum	Rapid Ab-Kit test RBPT	Leptospirosis: - ve Brucellosis: - ve	077/02/32

16.	Kawasoti-8, Nawalpur	Cattle (Jx)	Serum	Rapid Ab-Kit test RBPT	Leptospirosis: +ve Brucellosis: - ve	077/02/32
17.	Kawasoti-8, Nawalpur	Cattle (Jx)	Serum	Rapid Ab-Kit test RBPT	Leptospirosis: - ve Brucellosis: - ve	077/02/32
18.	Kawasoti-8, Nawalpur	Cattle (Jx)	Serum	Rapid Ab-Kit test RBPT	Leptospirosis: - ve Brucellosis: - ve	077/02/32
19.	Kawasoti-8, Nawalpur	Cattle (Jx)	Serum	Rapid Ab-Kit test RBPT	Leptospirosis: - ve Brucellosis: - ve	077/02/32
20.	Kawasoti-8, Nawalpur	Cattle (Jx)	Serum	Rapid Ab-Kit test RBPT	Leptospirosis: - ve Brucellosis: - ve	077/02/32
21.	Kawasoti-8, Nawalpur	Cattle (Jx)	Serum	Rapid Ab-Kit test RBPT	Leptospirosis: - ve Brucellosis: - ve	077/02/32
22.	Kawasoti-8, Nawalpur	Cattle (Jx)	Serum	Rapid Ab-Kit test RBPT	Leptospirosis: - ve Brucellosis: - ve	077/02/32
23.	Kawasoti-8, Nawalpur	Cattle (Jx)	Serum	Rapid Ab-Kit test RBPT	Leptospirosis: + ve Brucellosis: - ve	077/02/32

Annual urine Test (F/Y 076/077)

Months	Species/Breed	No of samples	Address	Total Samples
Shrawan	Buffalo/Local	1	Parvat	5
	Buffalo/MX	3	Pokhara-7	
	Dog	1	Pokhara-1	
Bhadra	Ox/Local	1	Pokhara-11	3
	Cow	1	Pokhara-13	
	Buffalo/Local	1	Pokhara-27	
Ashoj	Cattle/Jx	1	Pokhara-5	1
Kartik	Buffalo/Local	1	Machhapuchhre-4	1
Mangsir	Ox	1	Pokhara	1
Poush	Dog	1	Pokhara	2
	Dog	1	Pokhara-14	
Magh	Buffalo	1	Pokhara-23	2
	Dog	1	Pokhara-18	
Falgun	Cattle	1	Pokhara-7	5
	Buffalo	1	Annapurna-2	
	Buffalo	1	Pokhara-13	
	Ox/Local	1	Pokhara-19	
	Buffalo/Local	1	Pokhara-10	
Chaitra	-	-	-	-
Baisakh				
Jestha	Cattle/HFx	1	Pokhara-16	2
	Cattle/Jx	1	Pokhara-6	
Asad				
Total cases		22		22

Annual Milk Test (F/Y 076/077)

SLST test Result (F/Y 2076/077)											
Districts		Kaksi			Tanahun			Syangja			
Months	Species	Pos	Neg	Total	Pos	Neg	Total	Pos	Neg	Total	sample in plastic bag/bottle
Sharawan	Cattle	33	17	50				3	1	4	~50% samples
	Buffalo	12	13	25							
Bhadra	Cattle	40	30	70	1	0	1				
	Buffalo	19	15	34	1	0	1				
Ashoj	Cattle	12	7	19	3	0	3				
	Buffalo	16	7	23	1	0	1				
Katrik	Cattle	42	11	53	39	0	39				
	Buffalo	19	24	43	6	2	8				
Mangsir	Cattle	19	2	21							
	Buffalo	6	12	18							
Poush	Cattle	22	18	40							
	Buffalo	13	7	20							
Magh	Cattle	19	11	30							
	Buffalo	10	5	15							
Falgun	Cattle	9	7	16							
	Buffalo	9	4	13							
Chaitra	Cattle	1	1	2							
	Buffalo	4	1	5							
Baisakh	Cattle	11	0	11							
	Buffalo	0	1	1							
Jestha	Cattle	7	2	9							
	Buffalo	3	0	3							
Asad	Cattle	3	0	3							
	Buffalo	1	5	6							
Total Milk Tested				530			53			4	

Food Safety

Antibiotic Residue Test in the milk and meat sample of different districts of Gandaki Province

Study Area: 9 districts of Gandaki province

Methodology: Sample was tested by using RR test kit Mfg. by Rodejanarug Pharmaceutical Lit., Babgkok, Thiland

S.N	Districts	Antibiotic tested for meat samples	Meat samples			Milk Samples		
			Positive	Negative	Total	Positive	Negative	Total
1.	Nawalpur	B	11	8	19	0	21	21
2.	Kaski	B, A	19	15	34	8	6	14
3.	Syangja	A	9	9	18	12	28	40
4.	Myagdi	B, C	3	18	21	10	9	19
5.	Baglung	A, B	4	15	19	22	6	28
6.	Parvat	A, B, C	4	17	21	10	8	18
7.	Gorkha	C	17	3	20	9	11	20
8.	Tanahun	A, C	10	11	21	11	9	20
9.	Lamjung	B	13	9	22	5	15	20
	Total		90	105	195	87	113	200

Note:

- A- Tetracycline
- B- Macrolid, Aminoglycoside, Sulphonamides
- C- Penicillin

Bacterial isolates and AMR patterns:

Type of sample	No. of sample tested	Organism isolated	No growth	Type of Bacteria isolated
Milk	192	139	53	<i>E. coli, Streptococcus spp, staphylococcus spp</i>
Poultry liver	331	224	107	<i>E coli, Salmonella spp, Enterococcus spp</i>
Bone marrow	3	1	2	<i>Pasteurella hemolytica</i>
Urine	3	3	0	<i>E coli, Klebsiella spp</i>
Total	529	367	162	

SN	Antibiotic Name	Sensitivity %	Intermediate %	Resistance %
1	Amoxycillin	12	65	23
2	Ceftriaxone	52	31	17
3	Ciprofloxacin	31	29	40
4	Chloramphenicol	21	46	33
5	Doxycycline	23	43	34
6	Cotrimoxazole	27	43	30
7	Enrofloxacin	43	24	33
8	Amikacin	78	14	8
9	Gentamicin	66	13	21
10	Levofloxacin	14	48	38
11	OTC	57	27	16

Anti-microbial resistant patterns for E. coli organism from milk and poultry liver sample

