

Annual Progress Report Fiscal Year 2077/2078



**Government of Nepal
Ministry of Agriculture and Livestock Development
Department of Livestock Services
Foot and Mouth Disease & TADs Investigation Laboratory
Chapali, Budhanilkantha, Kathmandu, Nepal**

**Phone No +977-1-4370657
Fax: No+ 977-1-4372578**

Forward

It is my Great pleasure to publish this annual progress report for the fiscal year 2077/078 B.S.(2020/2021 AD). This issue includes activities and progress report of Foot and Mouth Disease & TADs Investigation Laboratory Budhanilkantha in this fiscal year.

As a reference laboratory for the Foot and Mouth Disease, Classical Swine Fever and Blue Tongue, the lab has used ELISA diagnostic tests for FMDV serotyping, FMD carrier status, FMD vaccine seromonitoring, Classical swine Fever antigen and Antibody detection ELISA and Blue Tongue sero-surveillance. Likewise, Molecular diagnosis of FMDV by conventional PCR has been doing routinely in the laboratory.

I would like to express my sincere thanks to Mr. Harka Bahadur Thapa, Veterinary Officer for his hard work to prepare this bulletin. Similarly, my special thanks also go to Mr. Krishna Kumar Tamang and Dr. Neera Ramdam, Veterinary Officer for their remarkable assistant and support to bring the report in this form.

Last but not least, I will be very happy to get any comments and suggestions for the improvement of the future publication.

Dr. SharmilaChapagainKafle
Senior Veterinary Officer
FMD & TADs Investigation Laboratory
Budhanilkantha, Kathmandu
Bhadra, 2078

Introduction

The laboratory was established in 2040 B.S in the name of Foot and mouth Disease (FMD) Control Laboratory. However, the name of office changed to National Foot and Mouth Disease and Trans - boundary Animals Diseases Laboratory (NFMD & TADs Lab) in 2061/62 B.S. From 2075/076 B.S., the laboratory is providing its service in the name of Foot and Mouth Diseases & Transboundary Animal Diseases Investigation Laboratory.

The lab has been serving as a National Reference Laboratory for the diagnosis of Foot and Mouth Disease, Classical Swine fever and Blue Tongue in the country since the establishment time. The diagnosis of FMDV is conducted by serotyping of the tissue samples by Antigen ELISA and conventional PCR. Likewise, antibodies ELISA for FMD vaccine seromonitoring and NSP ELISA for FMD sero surveillance are carried out in the lab.

Similarly, the lab has also carried out the antigen ELISA for Classical Swine Fever diagnosis and antibody ELISA for Classical Swine Fever vaccine seromonitoring and also sero-surveillance of Blue tongue disease of sheep by antibody ELISA.

Nepal has been participating in OIE and SAARC Progressive Control Pathway for the control of FMD in the Regional level since 2012 AD. For this purpose the lab has started carrier status surveillance from non-vaccinated animals of non-outbreak areas.

In Fiscal year 2077/78, serotype 'O' is predominantly circulating in 20 districts (93.68 %) and also serotype A (6.32 %) present.

The lab has also been participated in Proficiency Testing program conducted by World Reference Laboratory for FMD, Pirbright, UK.

Following are the major objectives of FMD & TADs Investigation Laboratory.

1. Act as a National Reference Laboratory for FMD, Classical Swine Fever, Bluetongue and other TADs.
2. Provide technical support to Department of Livestock Services to develop policies, strategies and program for the control of FMD and TADs and eventual eradication of FMD and TADs.
3. Acquire, adopt, upgrade and establish different laboratory diagnostic methods for FMD, CSF & Blue tongue
4. Conduct different laboratory tests to diagnose FMD virus serotypes.
5. Conduct Sero-Surveillance of FMD, Blue tongue & CSF.
6. Create awareness to the public and farmers about FMD & TADs.

Table 1: Annual Program and Progress of FMD & TADs Investigation Laboratory during FY 2077/078

S. No.	Programs & Activities	Annual Target			Annual Progress	Progress Weightage
		Unit	Target	Weightage		
A	Under the Capital Expenditure					
11.3.7.862	Purchase of 6-8 Litre Microwave for gel preparation	No.	1	0.22	1	0.22
11.3.7.863	Purchase of gel electrophoresis Machine	No.	1	0.62	1	0.62
11.3.7.867	Purchase of 500-700 ltr - 80Degree Centigrade refrigerator	No.	1	10.81	0	0
11.3.7.869	Purchase of 8-10 kg washing machine	No.	1	0.54	1	0.54
11.3.7.879	Purchase of desktop Computer with printer and UPS.	Set	1	0.54	1	0.54
11.3.7.979	Purchase of Laptop for PCR and ELISA recording	No.	1	0.51	1	0.51
11.3.7.331	Purchase of Lab Table for recording	No.	2	0.27	2	0.27
	Total			13.51		2.70
B	Under the Current Expenditure					
1.1.1.4	Gazetted Class II	Jana	1	3.56	1	3.56
1.1.1.5	Gazetted Class III	Jana	3	9.44	3	9.44
1.1.1.90	Non Gazetted I Class (Technical)	Jana	2	4.87	1	2.43
1.1.1.91	Non Gazetted I Class (Admin/Ac)	Jana	1	2.55	1	2.55
1.1.1.92	Non Gazetted II Class (Admin)	Jana	1	2.16	1	2.16
1.1.1.93	Non Gazetted II Class (Technical)	Jana	1	2.16	1	2.16
1.1.1.94	Office Helper Level	Jana	2	4.08	1	2.04
1.1.1.117	Light driver Level-5	Jana	1	2.70	1	2.70
1.2.2.1	Dearness allowance	Jana	12	1.56	10	1.30
1.2.10.4	Palo Paharaand Meeting allowance	Patak / No.	3	0.54	3	0.54
1.3.1.1	Dress cost for office Staffs	Jana	12	0.65	10	0.54
1.6.4.1	Insurance fund/cost dependent for office Staffs Contribution	Jana	12	0.31	10	0.26
2.1.2.8	Water Cost Tariff	Month	12	0.32	12	0.32
2.1.2.3	Electricity Tariff	Month	12	6.49	12	6.49
2.1.6.17	Telephone Cost	Patak	1	0.27	1	0.27
2.1.6.18	Communication Tariff	Patak	12	0.32	12	0.32
2.2.2.11	Petrol for Motorcycle	Litre	600	0.34	630	0.34
2.2.2.28	Fuel for Vehicle	Litre	600	0.29	605	0.29
2.2.2.134	Fuel for Surveillance & Diseases Investigation	Litre	1200	0.65	1205	0.65
2.2.3.8	Diesel for Generator	Litre	400	0.22	405	0.22
2.2.3.14	Refill Gas Cylinder	Patak	12	0.13	12	0.13
2.3.1.37	Repair Vehicle	Patak	3	1.62	3	1.62

S. No.	Programs & Activities	Annual Target			Annual Progress	Progress Weightage
		Unit	Target	Weightage		
2.3.2.138	Repair for Lab. machinery	Patak	1	1.89	1	1.89
2.3.3.35	Repair of Compound Wall	Patak	1	2.70	1	2.70
2.3.11.4	Repair of old drinking water pipe	Patak	1	1.89	1	1.89
2.2.2.11	Repair Motorcycle (Two wheel)	No.	7	0.37	7	0.37
2.3.13.16	Repair for office drainage	Patak	1	1.08	1	1.08
2.4.1.15	Stationary cost for office conduct	Patak	3	0.81	3	0.81
2.4.1.37	Stationary cost for office conduct	Patak	3	0.81	3	0.81
2.4.11.1	Newspaper and book	Patak	3	0.22	3	0.22
2.5.3.3	Contract for office Computer/Photocopy etc. Machinery Repair Service	Patak	3	0.13	1	0.13
2.5.7.3	Contract Service for Office helper	No.	1	1.26	1	1.26
2.7.5.487	Prepared of Annual Progress Report and Distribution	Patak	1	0.11	1	0.11
2.7.25.752	Master Checkup for office staffs	Patak	1	0.23	1	0.23
2.7.25.753	Lab Machinery Equipment Protection Service	Patak	1	0.32	1	0.32
2.7.25.754	Brochure and Flex print publication for information extension about TADs Diseases.	Patak	1	1.08	1	1.08
2.7.25.755	Prepare Transfer/Media kits and distribution	No.	200	0.32	275	0.32
2.7.25.758	Sample Collection from FMD affected animals	No.	100	0.22	198	0.22
2.7.25.762	FMD Virus Serotyping	No.	100	0.41	198	0.41
2.7.25.763	Outbreak investigation of FMD	Patak	6	0.27	6	0.27
2.7.25.764	FMD Carrier Status Sero-Surveillance	No.	1000	0.43	1055	0.43
2.7.25.764	FMD Carrier Status Sero-Surveillance on main market (Kathmandu valley) and Quarantine Checkpost	No.	1000	0.54	657	0.35
2.7.25.769	Purchase of FMD Sero-typing Reagent kit	Patak	1	3.24	1	3.24
2.7.25.771	Purchase of NSP ELISA Kit and Reagent	Patak	1	3.24	1	3.24
2.7.25.87	Purchase of FMD Virus Molecular Diagnosis Kit and Reagent	Patak / No.	1	1.08	1	1.08
2.7.25.773	Purchase of ELISA kit for CSF(AG)	Patak / No.	2	1.62	2	1.62
2.7.25.90	Purchase of ELISA kit for CSF(AB)	Patak / No.	1	0.81	1	0.81
2.7.25.775	Samples Collection and Investigation of CSFV Disease	No.	150	0.27	412	0.27

S. No.	Programs & Activities	Annual Target			Annual Progress	Progress Weightage
		Unit	Target	Weightage		
2.7.25.776	Purchase of Blue Tongue Disease Surveillance Kit	Patak	1	0.81	1	0.81
2.7.25.777	Blue Tongue Disease diagnosis by molecular tecnology	Patak	1	0.81	1	0.81
2.7.25.778	Blue Tongue Disease Surveillance	Patak	1000	0.54	797	0.43
2.7.25.779	Management of ELISA Kit and Collection of Serum sample from FMD vaccinated animal under the National FMD control Program	Patak	1	3.24	1	3.24
2.7.25.780	Serum Samples Collection from FMD vaccinated animal under the National FMD control Program	No.	1000	0.54	1182	0.54
2.7.25.781	Samples Preservation and send to OIE Reference lab (Pirbright)	Patak	1	0.11	1	0.00
2.8.1.404	Monitoring and Evaluation in livestock and Poultry Investigation Laboratory	Patak	3	0.41	2	0.41
2.8.1.420	Monitoring and Evaluation of FMD and CSF Diseases in Province and Local Level.	Patak	3	0.41	2	0.41
2.8.2.183	Prepare Tranfer/Media kit and distribution (Internal Travel)	No.	200	0.54	270	0.54
2.8.1.183	Sample collection of FMD affected animals(Internal Travel)	No.	100	0.54	198	0.54
2.8.2.185	FMD Carrier Status Sero-Surveillance(Internal Travel)	No.	1000	1.08	1055	1.08
2.8.2.187	Samples collection and Investigation of CSFV disease (Internal Travel)	No.	150	0.54	412	0.54
2.8.2.188	Blue Tongue Disease Surveillance in sheep (Internal Travel)	No.	1000	0.54	797	0.43
2.8.2.190	Payment TADA for Technical back stopping (Internal Travel)	Patak	1	0.32	0	0
2.8.2.191	Sample collection in Outbreak Areas (Internal Travel)	Patak	6	0.41	6	0.41
2.8.2.192	Payment TADA for Field Technician. (Internal Travel)	Patak	3	0.54	3	0.54
2.9.2.11	Insurance for vehicle renewal	No.	1	0.81	1	0.81
2.9.5.18	Animal Feed	Patak	12	0.54	12	0.54
2.9.9.3	Cost of Machinery Puja	Patak	2	0.02	2	0.02
2.9.9.3	Daily Tea and Miscellaneous Cost in Office	Mont h	12	0.81	12	0.81

S. No.	Programs & Activities	Annual Target			Annual Progress	Progress Weightage
		Unit	Target	Weightage		
7.2.9.14	Veterinary drugs purchase for animal treatment and disease Control	Patak	3	1.35	3	1.35
	Under the Current Expenditure			86.49		79.54
	Under the Capital and Current Expenditure			100.00		82.24

Major Activities of the Laboratory during F/Y 2077/078

1. FMD Sample Collection and Virus Typing:

In total 198 samples from FMD outbreak areas were received in the laboratory from 20 districts. Out of 198 samples, 71 samples were positive for FMD virus serotype O, 3 Samples A type and 3 samples O & A type. Most of the received samples were negative. It might be due to improper sampling time and quality of samples. The best samples like vesicular epithelium from the tongue, gums and dental pads and tissues from the inter-digital space at the early stage of infection within 4 days of onset of clinical signs are required for serotyping of FMD virus. Therefore, field veterinarians and technicians are required to know what and how the sample are collected and keep attention for the quality aspects of the samples in order to get better laboratory results.

Table 2: Sero-typing of FMD Virus by ELISA and PCR method(FY 2077/2078)

S.No	Districts	No of Tested Samples	Serotyping					Remarks
			O	O+A	A	Asia-1	NVD	
1	Bhaktapur	12	6	-	-	-	6	
2	Kanchanpur	16	4	3	1	-	8	
3	Lamjung	9	4	-	-	-	5	
4	Kavre	22	5	-	2	-	15	
5	Doti	9	-	-	-	-	9	
6	Kaski	15	7	-	-	-	8	
7	Kathmandu	10	5	-	-	-	5	
8	Nuwakot	5	3	-	-	-	2	
9	Makawanpur	18	2	-	-	-	16	
10	Chitwan	13	4	-	-	-	9	
11	Ramechhap	4	1	-	-	-	3	
12	Rupendehi	3	2	-	-	-	1	
13	Nawalparasi	34	13	-	-	-	21	
14	Dhading	2	-	-	-	-	2	
15	Siraha	3	-	-	-	-	3	
16	Dhankuta	3	1	-	-	-	2	
17	Ilam	9	8	-	-	-	1	
18	Syangja	4	4	-	-	-	-	
19	Sarlahi	4	1	-	-	-	3	
20	Darchula	4	1	-	-	-	3	

S.No	Districts	No of Tested Samples	Serotyping					Remarks
			O	O+A	A	Asia-1	NVD	
	Total	198	71	3	2	-	122	

2. FMD Carrier Status surveillance

A total of 1712 serum samples were collected/ received from Quarantine check post, Goat and sheep farm and Dashain Khasi Bazar of Kathmandu valley and 10 different districts. Those samples tested by FMDV 3ABC antibody ELISA method to study the carrier status of FMD in the animals. Out of 1712 serum samples, 356 samples (17.40%) were positive (Table 3).

Table 3: Result of NSP ELISA (FY 2077/2078)

S.No.	District/Quarantine Checkpost	No. of samples Tested	Positive	Negative	Remarks
1	Nagdhunga checkpost	97	7	90	
2	Dashain khasi Bazar Ktm Valley	100	3	97	
3	Bhairahawa Q checkpost	55	0	55	
4	Chitlang	100	39	61	
5	Goat Genetic Resource Centre Budhitola kailali	151	0	151	
6	Rukum	292	9	283	
7	Kathmandu	163	65	98	Vaccinated
8	Khotang	84	0	84	
9	Kailali	107	46	61	
10	Jitpur	4	0	4	Outbreak areas
11	Kavre	241	67	174	Vaccinated
13	kaski	113	46	67	Outbreak areas
14	Ramechhap	12	4	8	Outbreak areas
15	Chitwan	33	3	30	
16	Kanchanpur	154	67	87	
	Total	1712	356	1356	

3. FMD Vaccine Sero monitoring

A total no of 1182 serum samples were received from 10 districts and tested by Antibody ELISA. Out of 1182 serum samples 854 samples (72.25%) were found positive for O type antibody. The results of the seromonitoring are presented in table 4.

Table 4: Result of FMD Seromonitorng (FY 2077/2078)

S.No.	District	No. of samples examined	Positive	Negative	Remarks
1	Kathmandu	225	184	41	
2	Lalitpur	134	125	9	
3	Kavre	243	157	86	
4	Kaski	165	141	24	
5	Ilam	68	45	23	
6	Pachthar	75	29	46	
7	Chitwon	23	20	3	
8	Kailali	92	61	31	
9	Kanchanpur	154	89	65	
10	Bhaktapur	3	3	0	
	Total	1182	854	328	

4. Classical Swine Fever Laboratory Diagnosis:

Classical swine fever (CSF) is a highly contagious and economically significant viral disease of pig caused by classical swine fever virus (CSFV), a member of the genus *Pestivirus* and family Flaviviridae. Only one CSFV serotype has been found, but minor antigenic variability has been demonstrated between viral strains.

In FY 2077/078 a total of 63 tissue samples from pigs were received and tested by double sandwich antigen ELISA method in the lab. Out of 63 samples only 5 (7.93 %) samples were antigen positive (Table 5). Likewise, out of 341 vaccinated serum samples, only 254 (74.48%) samples were antibody positive (Table 5).

Table 5: Result of CSFV Antigen and Antibody (FY 2077/2078)

Antibody					Antigen				
S. No.	District	Total Tested Samples	+Ve	-Ve	S. No.	District	Total Tested Samples	+Ve	-Ve
1	Kathmandu	118	109	9	1	Kavre	6	2	4
2	Kaski	89	40	49	2	Syangja	3	-	3
3	Morang	26	13	13	3	Kaski	26	-	26
4	Jhapa	16	10	6	4	Tanahuin	6	1	5
5	Kanchanpur	50	40	10	5	CVL	3	2	1
6	Kailali	42	42	0	6	Kanchanpur	5	-	5

Antibody					Antigen				
S. No.	District	Total Tested Samples	+Ve	-Ve	S. No.	District	Total Tested Samples	+Ve	-Ve
	-	-	-	-	7	Gorkha	4	-	4
	-	-	-	-	8	Kailali	5	-	5
	-	-	-	-	9	Kathmandu	5	-	5
	Total	341	254	87		Total	63	5	58

5. Bluetongue Sero-surveillance Programme:

Bluetongue is an infectious, non-contagious, arthropod (*Culicoides* species) transmitted disease of sheep with possible occurrence in other domestic and wild ruminants. During 2077/2078, a total of 797 serum samples from the 4 districts and Kathmandu Valley Khasi Bazar were collected. Out of 797 tested samples, 176 samples (22.08%) were positive and 621 samples were negative. The results of the ELISA test of BTV is presented in table 6.

Table 6: Detection of Bluetongue Virus Antibody from Sheep FY 2077/2078

S.N.	District	Species	Flock type	Tested Samples	ELISA Result		Remarks
					+Ve	-Ve	
1	Khotang	Sheep		142	9	133	
2	Budhitola Goat Resource Farm	Goat		151	121	30	
3	Chitlang Goat Farm	Goat		100	4	96	
4	Rukum	Sheep	Sedentary	292	25	267	
6	Dashain Khasi Bazar from Ktm valley	Khasi		112	17	95	
Total				797	176	621	

6. Laboratory Animal Management

Rabbit are kept and maintained for the diagnostic and vaccine production in the National Vaccine Production Laboratory, Central Veterinary Laboratory and Veterinary Standard and Drugs Administrative Office (Table 7).

Table 7: Record of Lab Animals (FY 2077/2078)

Animal Details	Distributed in NVPL	Stock in the unit
Rabbit	50	16

Table 8: Description of Staffs (FY 2077/2078)

S. N.	Name of Staff	Post	Class	Post Sanction	Post Available	Vacant
1.	Dr. SharmilaChapagainkafle	SVO	G. II	1	1	0
2.	Mr. Harka Bahadur Thapa	VO	G III	1	1	0
3.	Mr. Krishna Kumar Tamang	VO	G III	1	1	0
4	Dr.NiraRamdam	VO	G III	1	1	0
5	Mr. Bal Kumar Rai	AHT	NG I	1	1	0
6	-	AHT	NG I	1	0	1
7	BimalaThapa Basnet	Account	NG I	1	1	0
8	Chitra Bahadur Thapa	JAHT	NG II	1	1	0
9	Ram Bahadur Shahi	Kharidar	NG II	1	1	0
10	Mr.Shankar Prasad Paudel	Light Driver	-	1	1	0
11	Mr.Yam Bahadur. Karki	Office Helper	-	1	1	0
12	-	Office Helper	-	1	0	1
	Total	12		12	10	2

Table 9: Details of Budget Transaction & Expenditure FY (2077/2078)

Budget line	Budget heads	Approved Budget (NRs.)	Expenditures (NRs.)
21111	Staff Salary	5830000.00	5333000.20
21121	Dress	120000.00	110000.00
21132	Dearness Allowance	288000.00	234000.00
21139	Extra Allowance	100000.00	28525.00
21213	Insurance Fund for staffs	58000.00	46800.00
22111	Water & Electricity Tariff	1260000.00	1230514.00
22112	Communication Cost	110000.00	88753.00
22212	Fuel	236000.00	236000.00
22213	Repair of Vehicle	300000.00	300000.00
22214	Insurance and Renewal	150000.00	107049.00
22221	Machinery Equipment Repair Cost	350000.00	346850.00
22231	Maintenance Cost of Public Wealth	1050000.00	1034279.00
22311	Masalanda and Office materials	300000.00	299881.00
22312	Animal feed	100000.00	100000.00
22313	Book and material cost	40000.00	40000.00
22314	Fuel (Extra Uses)	64000.00	53751.00
22411	Service and counseling Cost	24000.00	24000.00
22413	Contract Service Cost	234000.00	234000.00
22522	Program cost	3997000.00	3661751.00

Budget line	Budget heads	Approved Budget (NRs.)	Expenditures (NRs.)
22611	Evaluation and monitoring cost	150000.00	48950.00
22612	TA/DA cost	685000.00	737830.00
22711	Miscellaneous cost	154000.00	153674.00
27213	Cost of Veterinary Drugs	250000.00	249930.00
	Total	1600000.00	14748487.20
31122	Machineries and Tools	2499000.00	516625.00
31123	Furniture and Fixture	50000.00	49720.00
	Total Amount	2499000.00	566345.00
	Grand Total Amount	18400000.00	15314832.2

6. Major achievements:

1. Routine Sero-typing of FMD virus at the laboratory has helped to know the status of FMD virus serotypes in the country and vaccine to be used. Finally it helps to control the FMD in time and prevent from the heavy economic loss of farmers.
2. Routine Sero–Surveillance of FMDV to find out the status of FMD in non-outbreaks areas and help to launch RBSP of FMD PCP Control Pathway.
3. Sero-surveillance of bluetongue disease in sheep also helps to know the status of disease in Nepal.
4. Routine seromonitoring of Vaccinated animals against FMDV and CSFV give the clear picture about the quality of vaccine.
5. Since 2012 the laboratory has been doing the molecular diagnosis of FMDV by Conventional PCR

Abbreviation

BTV= Blue Tongue Virus

CSFV= Classical Swine Fever Virus

ELISA= Enzyme Linked Immunosorbent Assay

EuFMD= European Union Foot and Mouth Disease

FMD = Foot and Mouth Disease

FMDV=Foot and Mouth Disease Virus

NSP= Non Structural Protein

PCP= Progressive Control Pathway

PCR= Polymerase Chain Reaction

RBSP= Risk Based Strategy Plan

TADs= Transboundary Animal Diseases

WTO= World Trade Organization

Some glimpse of NSP serosurveillane in Kathmandu Valley (Dashain Khasi Bazar and Nagdhunga Quarantine checkpoint)



Some glimpse of NSP serosurveillane in Goat development Farm Chitlang



Some glimpse of Blue Tongue serosurveillance in Sheep of Rukum

