

Annual Progress Report

Fiscal Year 2076/2077



Government of Nepal
Ministry of Agriculture and Livestock Development
Department of Livestock Services
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Forward

It is my Great pleasure to publish this annual progress report for the fiscal year 2076/077 B.S.(2019/2020 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, 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, Veterinary Officer 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
Chief
FMD & TADs Investigation Laboratory
Budhanilkantha, Kathmandu
Aswin, 2077

FMD and TADs Investigation Laboratory
Budhanilkantha, Kathmandu
(Annual Technical Report, 2076/077)

Introduction

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

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 different types of ELISA like serotyping of the tissue samples by Antigen ELISA and conventional PCR. Likewise for seromonitoring antibody ELISA for different serotypes is carried out in the lab.

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

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

From 2001 to 2011, prevalence of 'O' serotype was 82.80 % followed by serotype Asia 1 (14.48 %) and serotype A (2.72 %). In 2018-2019, O' serotype was 90.26 % followed by serotype Asia 1 (7.96%) and serotype A (1.77 %). In 2019-2020, only 'O' serotype is circulating in the country.

According to WRLFMD, Pirbright, UK report the genetic and antigenetic typing of serotype O FMD virus isolates from Nepal belong to the Middle East-South Asia (ME-SA) topotype. In 2017-2019 Ind-2001d was prevailing.

The lab has also been participated in Kathmandu training Center (KTC) program of EuFMD Australia since 2012. That program has helped to enhance the capacity of the laboratory and got exposure to international level.

The lab also has 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 test 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 2076/077

S. No.	Programs & Activities	Annual Target			Annual Progress	Progress Weightage
		Unit	Target	Weightage		
A	Under the Capital Expenditure					
11.3.7.414	Purchase of shoes cover Machine	Num	1	0.80	1	0.80
11.3.7.415	Purchase of Micro Centrifuge Machine	Num	1	2.66	1	2.66
11.3.7.416	Purchase of Centrifuge Machine	Num	1	1.44	1	1.44
11.3.7.417	Purchase of hot air oven 54 letter	Num	1	1.86	1	1.86
11.3.7.419	Purchase of Heater	Num	3	0.05	3	0.05
11.3.7.420	Purchase of Fan	Num	4	0.21	4	0.21
11.3.7.421	Purchase of Generator Battery Charger	Num	1	0.50	1	0.50
11.3.7.536	Purchase of ADF Scanner Machine	Num	1	0.40	1	0.40
11.3.22.130	Purchase of Desktop Computer Set	Patak	3	1.20	3	1.20
11.4.22.50	Construct of Office Gate	Patak	1	1.20	1	1.20
11.6.13.19	Purchase of Lab Stool	Num	5	0.21	5	0.21
11.6.13.154	Furniture and Fixtures for Office	Patak	1	0.53	1	0.53
11.6.13.194	Polyvinyl Carpeting in Serology Room	Patak	1	4.50	1	4.50
	Total			15.55		15.55
B	Under the Current Expenditure					
1.1.1.4	Gazetted Class II	Jana	1	3.30	1	3.30
1.1.1.5	Gazetted Class III	Jana	3	8.52	3	8.52
1.1.1.25	Light Driver Level 5	Jana	1	2.22	1	2.22
1.1.1.30	Office Helper Level 5	Jana	2	4.02	1	2.09
1.1.1.90	Non Gazetted I Class (Technical)	Jana	2	4.53	0	1.17
1.1.1.91	Non Gazetted I Class (Admin/Ac)	Jana	1	2.13	1	2.13
1.1.1.92	Non Gazetted II Class (Admin)	Jana	1	1.97	1	1.97
1.1.1.93	Non Gazetted II Class (Technical)	Jana	1	2.08	1	2.08
1.2.2.1	Dearness allowance	Jana	12	1.53	9	0.75
1.2.10.4	Palo Pahara and Meeting	Patak	6	0.53	6	0.53

S. No.	Programs & Activities	Annual Target			Annual Progress	Progress Weightage
		Unit	Target	Weightage		
	allowance	/Num				
1.2.13.3	Lab risk allowance	Num	1	3.90	1	3.90
1.3.1.1	Dress cost for office Staffs	Jana	12	0.64	9	0.50
1.6.4.1	Insurance fund/cost dependent for office Staffs Contribution	Jana	12	0.31	9	0.24
2.1.2.3	Electricity Tariff	Month	12	6.29	12	6.29
2.1.2.5	Water Cost Tariff	Month	12	0.32	12	0.32
2.1.6.17	Telephone Cost	Patak	1	0.27	1	0.27
2.1.6.18	Communication Tariff	Patak	12	0.31	12	0.31
2.2.2.32	Petrol for Motorcycle	Litre	840	0.49	845	0.49
2.2.2.41	Fuel for Vehicle	Litre	1680	0.89	1680	0.89
2.2.3.8	Diesel for Generator	Litre	250	0.21	250	0.21
2.2.3.14	Refill Gas Cylinder	Patak	12	0.10	12	0.10
2.3.1.5	Repair Motorcycle (Two wheel)	Num	7	0.37	7	0.37
2.3.1.54	Repair four Wheel Vehicle	Patak	2	1.07	2	1.07
2.3.2.68	Repair of Machinery Equipment	Patak	3	0.27	3	0.27
2.3.3.35	Repair of Compound Wall	Patak	1	2.13	1	2.13
2.3.3.36	Repair of Toilet for office staffs	Patak	1	0.53	1	0.53
2.4.1.37	Stationary cost for office conduct	Patak	3	1.60	3	1.60
2.4.13.7	Newspaper and Book Purchase	Patak	3	0.40	3	0.40
2.5.7.3	Contract Service for Office helper	Num	1	1.33	1	1.33
2.5.7.5	Dress allowance for Contract Service office helper	Num	1	0.05	1	0.05
2.5.7.65	Contract for office Computer/Photocopy etc. Machinery Repair Service	Jana	1	0.27	1	0.27
2.5.8.39	Lab Machinery Equipment Protection Service	Patak	3	0.32	3	0.32
2.6.5.36	TADs Interaction Program	Patak	1	1.07	1	1.07
2.7.5.113	Prepared of Annual Progress Report and Distribution	Patak	1	0.08	1	0.08
2.7.25.77	Master Checkup for office staffs	Patak	1	0.19	1	0.19
2.7.25.79	Brochure and Flex print publication for information extension about TADs Diseases.	Patak	1	1.33	1	1.33
2.7.25.80	Prepare Transfer/Media kits and distribution	Num	200	0.32	220	0.32
2.7.25.81	Sample Collection of FMD affected animals	Num	100	0.23	25	0.06
2.7.25.82	FMD Virus Serotyping	Num	100	0.40	33	0.16
2.7.25.83	Outbreak investigation of FMD	Patak	6	0.27	6	0.27
2.7.25.84	FMD Carrier Status Sero-	Num	800	0.27	1342	0.27

S. No.	Programs & Activities	Annual Target			Annual Progress	Progress Weightage
		Unit	Target	Weightage		
	Surveillance					
2.7.25.85	Purchase of FMD Sero-typing Reagent kit	Patak	1	4.00	1	4.00
2.7.25.86	Purchase of NSP ELISA Kit and Reagent	Patak	1	4.26	1	4.26
2.7.25.87	Purchase of FMD Virus Molecular Diagnosis Kit and Reagent	Patak /num	2	2.13	2	2.13
2.7.25.88	Purchase of Viral RNA Extraction Purification Minikit	Patak /num	1	1.33	1	1.33
2.7.25.89	Purchase of ELISA kit for CSF(AG)	Patak /num	1	0.80	1	0.80
2.7.25.90	Purchase of ELISA kit for CSF(AB)	Patak /num	1	0.80	1	0.80
2.7.25.91	Samples Collection and Investigation of CSFV Disease	Num	150	0.27	189	0.27
2.7.25.92	Blue Tounge Disease Surveillance	Patak	1	0.17	1	0.17
2.7.25.93	Purchase of Blue Tounge Disease Surveillance Kit	Patak	1	1.07	1	1.07
2.7.25.94	Management of ELISA Kit and Collection of Serum sample from FMD vaccinated animal under the National FMD control Program	Patak	1	4.26	1	4.26
2.7.25.95	Samples Preservation and send to OIE	Patak	1	0.11	1	0.00
2.7.25.464	Technical Backstopping in livestock and Poultry Investigation Laboratory	Patak	1	0.11	1	0.11
2.8.1.109	Monitoring and Evaluation of FMD and CSF Diseases in Province and Local Level.	Patak	3	0.40	2	0.28
2.8.1.267	Monitoring and Evaluation in livestock and Poultry Investigation Laboratory	Patak	3	0.40	2	0.28
2.8.2.38	Prepare Tranfer/Media kit and distribution (Internal Travel)	Num	200	0.40	220	0.40
2.8.1.39	Sample collection of FMD affected animals(Internal Travel)	Num	100	0.53	25	.014
2.8.2.40	Outbreak Investigation of FMD (Internal Travel)	Patak	6	0.40	6	0.40
2.8.2.41	FMD Carrier Status Sero-Surveillance(Internal Travel)	Num	400	1.19	1342	1.19

S. No.	Programs & Activities	Annual Target			Annual Progress	Progress Weightage
		Unit	Target	Weightage		
2.8.2.42	Samples collection and Investigation of CSFV disease (Internal Travel)	Num	150	0.53	189	0.53
2.8.2.43	Blue Tongue Disease Surveillance in sheep (Internal Travel)	Patak	1	0.27	1	0.27
2.8.2.45	Internal visit for Program Conduct (Internal Travel)	Patak	3	0.32	2	0.22
2.8.2.46	Sample collection in Outbreak Areas (Internal Travel)	Patak	3	0.40	3	0.40
2.8.2.47	Payment TADA for Field Technician. (Internal Travel)	Patak	3	0.32	3	0.32
2.8.2.126	Payment TADA for Technical back stopping (Internal Travel)	Patak	1	0.16	1	0.16
2.8.2.141	Payment TADA for office staffs to distribute Flexprint and Brochure. (Internal Travel)	Patak	7	0.53	7	0.53
2.9.2.8	Insurance for vehicle renewal	Num	8	0.38	4	0.20
2.9.5.18	Animal Feed	Patak	12	0.53	12	0.53
2.9.6.4	Daily Tea and Miscellany Cost in Office	Month	12	0.53	12	0.53
7.2.9.1	Veterinary drugs purchase for animal treatment and disease Control	Patak	3	0.80	3	0.80
				84.45		76.80
				100.00		92.98

Major Activities of the Laboratory during F/Y 2076/077 are as follows:

1. FMD Sample Collection and Virus Typing:

In total 22 samples from FMD outbreak areas were received in the laboratory from 5 districts. Out of 22 samples, 6 samples were positive for FMD virus serotype O. The lab received 11 samples for Proficiency testing (PT) from World Reference Laboratory, Pirbright, Uk. Out of 11 PT samples, 4 samples O type, 1 Samples A type and 1 samples Asia 1 type came out positive. 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 2076/2077

S.No	Districts	No of Tested Samples	Serotyping				Remarks
			O	A	Asia-1	NVD	
1	PT Panel	11	4	1	1	5	
2	Nuwakot	2	-	-	-	2	
3	Dhading	2	-	-	-	2	
4	Kathmandu	7	3	-	-	4	
5	Darchula	9	3	-	-	6	
6	Kavre	2	-	-	-	2	
	Total	33	10	1	1	21	



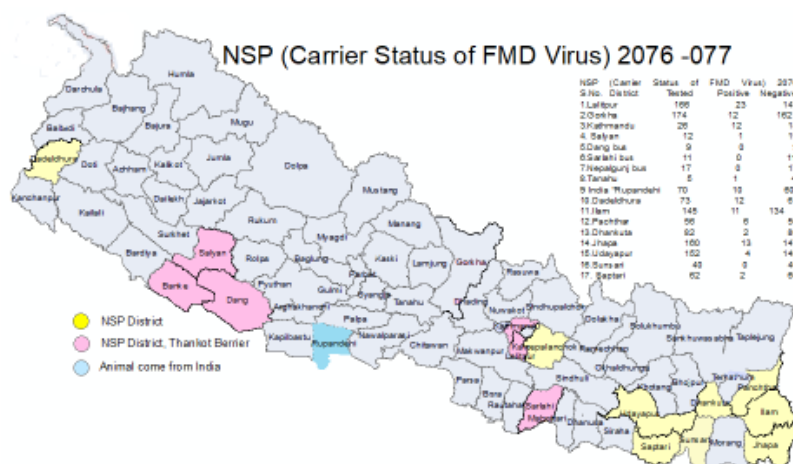
2. FMD Carrier Status surveillance

A total of 1344 serum samples from non-vaccinated animals from non-outbreak areas were collected from 20 districts and received in the lab and tested by FMDV 3ABC antibody ELISA method to study the carrier status of FMD in the animals in concerned districts, quarantine check post and major market places. Out of 1344 samples, 127 samples (9.44%) were positive (Table 3).

Table 3: Result of NSP ELISA (FY 2076/2077)

S.No.	District	No. of samples examined	Positive	Negative	Remarks
1	Lalitpur	207	34	173	16.42
2	Gorkha	174	26	162	6.89

S.No.	District	No. of samples examined	Positive	Negative	Remarks
3	Kathmandu	26	12	14	46.15
4	Salyan Bus	12	1	11	8.33
5	Dang Bus	9	-	9	0
6	Sarlahi Bus	11	-	11	0
7	Nepalgunj Bus	17	-	17	0
8	Tanahun	6	1	5	16.66
9	Dhangadhi	6	-	6	0
10	Surkhet	3	-	3	33.33
11	India	70	10	60	14.49
12	Dadeldhura	70	12	58	17.14
13	Kavre	28	5	23	17.24
14	Ilam	145	12	133	8.27
15	Panchthar	56	6	50	10.71
16	Dhankuta	82	2	80	2.43
17	Jhapa	160	13	147	8.12
18	Udayapur	152	4	148	2.63
19	Sunsari	40	0	40	0
20	Saptari	62	2	60	3.22
	Total	1344	127	1217	9.44%

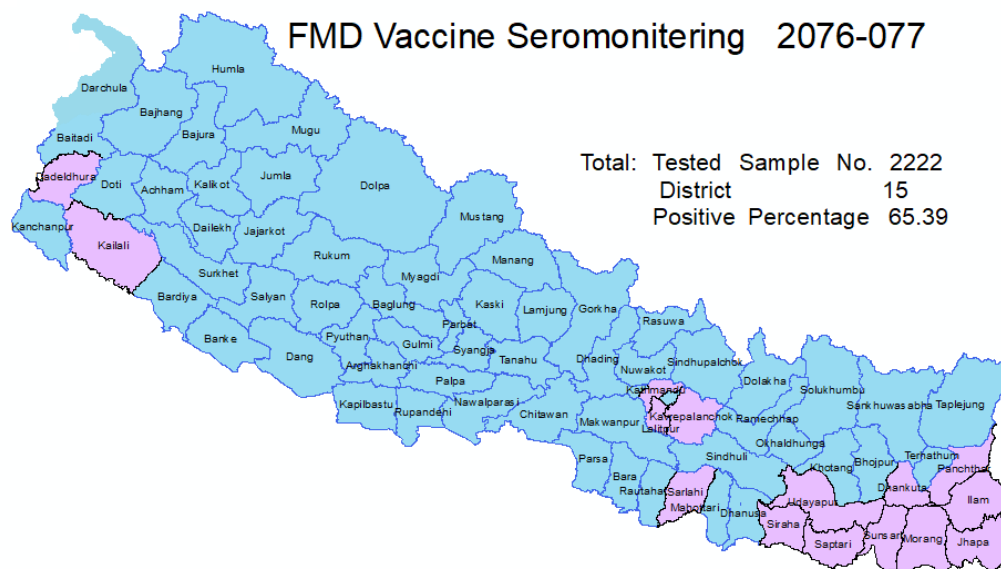


3. FMD Vaccine Sero monitoring

A total no of 2222 serum samples were received from 15 districts and tested by ELISA. Out of 2222 samples 1453 samples (65.39%) were found positive for O type antibody. The results of the seromonitoring are presented in table 4.

Table 4: Result of FMD Seromonitorng (FY 2076/2077)

S.No.	District	No. of samples examined	Positive	Negative	Remarks
1	Siraha/Saptari	668	367	301	54.9
2	Kailali/Kanchanpur	140	71	69	50.71
3	Dadeldhura	160	114	46	71.25
4	Kavre	70	46	24	65.71
5	Kathmandu	77	63	14	81.81
6	Lalitpur	80	75	5	93.75
7	Siraha	81	61	20	75.30
8	Jhapa	187	135	52	72.19
9	Ilam	120	86	34	71.66
10	Udayapur	192	151	41	78.64
11	Morang	161	111	50	68.94
12	Sunsari	178	99	79	55.61
13	Dhankuta	60	43	17	71.66
14	Panchthar	48	31	17	64.58
	Total	2222	1453	769	65.39



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 2076/077a total of 43 tissue samples from pigs were received and tested by double sandwich antigen ELISA method in the lab. Out of 43 samples only 16 (37.20. %) samples were antigen positive (Table 4). Likewise, out of 146 vaccinated serum samples, only 89 (60.95%) samples were antibody positive (Table 5).

Table 5: Result of CSFV Antigen and Antibody (FY 2076/2077)

Antibody					Antigen				
S. No.	District	Total Tested Samples	+Ve	-Ve	S. No.	District	Total Tested Samples	+Ve	-Ve
1	Kathmandu	97	59	38	1	Kathmandu	3	3	0
					2	Kailali	7	0	7
					3	Saptari	9	0	9
					4	Sunsari	5	0	5
					5	Syangja	2	0	2
					6	Lamjung	4	4	0
					7	Kaski	6	6	0
					8	Tanahun	3	3	0
2	Lalitpur	6	4	2	9	Lalitpur	4	0	4
3	Kavre	43	26	17	-	-	-	-	-
	Total	146	89	57		Total	43	16	27

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 2076/2077, a total of 640 serum samples from the 11 districts were collected. Out of 640 tested samples, 199 samples (31.09%) were positive and 441 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 2076/2077

S.N.	District	Species	Flock type	Tested Samples	ELISA Result		Remarks
					+Ve	-Ve	
1	Kavre	Goat		162	3	159	1.5
2	Dolkha	Goat		147	24	123	16.32

3	Rupendehi	Goat		70	20	50	28.57
4	Ramechhap	Goat		81	70	11	86.41
5	Rasuwa	Goat		78	36	42	46.15
6	Khotang	Sheep	Sedentary	38	13	25	34.21
7	Dang	Goat		9	6	3	66.66
8	Sarlahi	Goat		11	8	3	72.72
9	Banke	Goat		17	4	13	23.52
10	Kaski	Goat		15	8	7	53.33
11	Salyan Bus	Goat		12	7	5	58.33
				640	199	441	31%+ve

6. Laboratory Animal Management

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

Table 7: Record of Lab Animals (FY 2076/2077)

Animal Details	Distributed in BPD	Stock in the unit
Rabbit	14	33

Table 8: Description of Staffs (FY 2076/2077)

S. N.	Name of Staff	Post	Class	Post Sanction	Post Available	Vacant
1.	Dr. Sharmila Chapagain	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. Nira Ramdam	VO	G III	1	1	0
5	Bimala Thapa Basnet	Account	NG I	1	1	0
6	-	AHT	NG I	1	0	1
7	-	AHT	NG I	1	0	1
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	9	3

Table 9: Details of Budget Transaction & Expenditure FY (2076/2077)

Budget line	Budget heads	Approved Budget (NRs. in 000)	Expenditures (NRs. in 000)
21111	Staff Salary	5400000.00	5040608.70
21121	Dress	120000.00	90000.00
21132	Dearness Allowance	288000.00	210000.00
21139	Risk and Extra Allowance	832000.00	667922.25
21213	Insurance Fond for staffs	58000.00	42000.00

Budget line	Budget heads	Approved Budget (NRs. in 000)	Expenditures (NRs. in 000)
22111	Water & Electricity Tariff	1240000.00	1156775.00
22112	Telephone and Communication	108000.00	93949.00
22212	Fuel	260000.00	260000.00
22213	Repair of Vehicle	270000.00	269982.00
22214	Insurance and Renewal	72000.00	40942.00
22221	Machinery Equipment Repair Cost	50000.00	47780.00
22231	Cost of nirmite Public Wealth	500000.00	363813.00
22311	Masalanda and Office materials	300000.00	299351.00
22312	Animal feed	100000.00	100000.00
22314	Fuel (Extra Uses)	58000.00	39724.00
22315	Newspaper, print and Information Publication Cost	76000.00	69675.00
22413	Contact Service Cost	370000.00	297592.00
22512	Skill development, awareness training and interaction cost	200000.00	200000.00
22522	Program cost	4202000.00	4031788.00
22611	Evaluation and monitoring cost	150000.00	60650.00
22612	TA/DA cost	950000.00	594070.00
22711	Miscellaneous cost	100000.00	99542.00
27213	Cost of Veterinary Drugs	150000.00	150000.00
	Total	15854000.00	14226163.95
31122	Machineries and Tools	1709000.00	1683467.00
31123	Furniture and Fixture	985000.00	948126.00
31159	Extra public construct	225000.00	223370.00
	Total Amount	2919000.00	2854963.00
	Grand Total Amount	18773000.00	17081126.95

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.
2. Routine Sero-Surveillance of FMDV to find out the status of FMD and helped to proceed for the FMD PCP Control Pathway.
3. Sero-surveillance of bluetongue disease in sheep also helped 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
6. Real Time PCR of FMD has also started from 2015.

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

IAH=Institute of Animal Health

KTC= Kathmandu Training Centre

NSP= Non Structural Protein

PCR= Polymerase Chain Reaction

TADs= Transboundary Animal Diseases

WTO= World Trade Organization



Some glimpse of TADs Interaction Program in Janakpur





Some glimpse of Samples collection of pig in the farm

