



**Indian Council of Agricultural Research**



**All India Coordinated Research Project  
On  
Animal Disease Monitoring and  
Surveillance**

**ANNUAL REPORT  
(2020-2021)**



**COLLABORATING UNIT, KOHIMA  
DEPARTMENT OF ANIMAL HUSBANDRY & VETERINARY SERVICES,  
GOVERNMENT OF NAGALAND**

## CONTENTS

Sl. No.	Contents		Page No.
1.	Section-I	Summary of the project	2
2.	Section-II	Physical map of Nagaland	3
3.	Section-III	Nagaland state at a glance	4
4.	Section-IV	1. Livestock population of Nagaland as per 2019 Livestock Census	5
		2. Market rates of livestock and livestock products	5-6
5.	Section-V	Action taken report of AICRP on ADMAS, Nagaland center for the year 2020-21	7
6.	Section-VI	Details of the Centre, PI & Co PI and Year of start	8
7.	Section-VII	1. Report on livestock disease profile of Nagaland (2020-21)	9
		2. Epidemiological Analysis of Diseases i. Hemorrhagic Septicemia (HS) ii. Classical Swine Fever (CSF) iii. African Swine Fever (ASF)	10
8.	Section-VIII	1. Sero-Surveillance	11
9.	Section-IX	Trends of disease in Nagaland for the past five years (2016-21)	11-12
10.	Section-X	Economic analysis of major livestock diseases in Nagaland during the year 2020-21	12-13
11.	Section-XI	1. Trainings attended by PI and Co-PI during the year 2020-21	13
12.	Section-XII	1. Acknowledgement	14
		2. Appendix	15

## **SECTION-I**

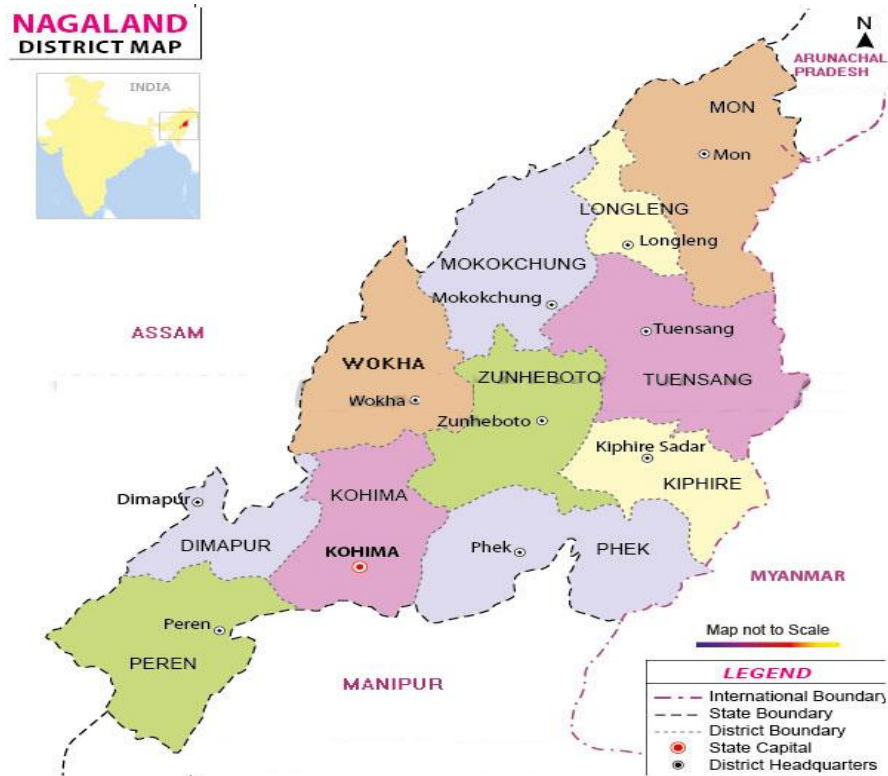
### **SUMMARY OF THE REPORT**

The detailed summary of various activities and achievements in respect of the AICRP on ADMAS, Nagaland Center, Kohima for the year 2020-21 are given below.

1. The state has a cattle population of 18,401 cross breed cattle, 30913 indigenous cattle, 207090 cross breed pig, 404695 indigenous pig, 15654 buffalo, 23123 mithun, 361 sheep and 31602 goat populations as per the Livestock Census 2019.
2. The pig serum samples collected from 10 districts of Nagaland during 2020-21 were dispatched to NIVEDI for sero-surveillance.
3. During the period under report, (excluding FMD and poultry disease) one outbreak of HS in Mithun, cattle and goat was recorded. Outbreak was reported in Longleng district. Following this, seven outbreaks of Classical swine fever (CSF) and two outbreaks of African swine fever (ASF) was reported. Diagnosis was done basing on PM findings and confirmation by laboratory test.
4. The economic loss resulting from treatment and death of mithun, cattle, goat and swine due to outbreak during 2020-21 is approximately Rs. 2,10,09,500/- (Rupees two crore ten lakhs nine thousand five hundred) only. The detailed economic loss incurred during the year 2020-21 is depicted in table 10.

## SECTION-II

### PHYSICAL MAP OF NAGALAND



### NAGALAND STATE

- |                       |  |
|-----------------------|--|
| 1. State              | : Nagaland                                   |
| 2. Capital            | : Kohima                                     |
| 3. Area               | : 16,579 Sq. Km.                             |
| 4. Altitude           | : The capital is 1261 meters above sea level |
| 5. Latitude           | : state lies in between 26.6° N and 27.4° N  |
| 6. Longitude          | : The state lies in between 98° E and 96° E  |
| 7. Population         | : 1,980,602 (2011 Census)                    |
| 8. No. of District    | : 11(eleven)                                 |
| 9. Neighboring states | : Assam, Manipur, Arunachal Pradesh          |

### **SECTION –III**

#### **Nagaland state at a glance**

Nagaland is one of the smallest states of India with an area of 16,579 km<sup>2</sup> and a population of 1,980,602 as per the 2011 census. It became the 16th state of the Indian union on 1<sup>st</sup> December 1963. It borders the state of Assam to the west, Arunachal Pradesh and part of Assam to the north, Myanmar to the east and Manipur to the south. The state capital is Kohima, and the largest city is Dimapur. The state is inhabited by 16 major tribes - Ao, Angami, Chang, Konyak, Lotha, Sumi, Chakhesang, Khiamniungam, Kachari, Phom, Rengma, Sangtam, Yimchungrü, Kuki, Zeliang and Pochury as well as a number of sub-tribes.

#### **Geographic condition:**

The state is mostly mountainous except those areas bordering to Assam valley. Mount Saramati is the highest peak with a height of 3,840 meters and its range forms a natural barrier between Nagaland and Burma. The state lies between the parallels of 98-degree and 96-degree East Longitude and 26.6-degree and 27.4-degree latitude north of the equator. The state is home to rich varieties of flora and fauna.

#### **Agro-climatic condition:**

The average rainfall is between 175 cm and 250 cm. Most of the heavy rainfall occurs during the months from June to September. The temperatures during winter vary from 4°C to 24°C. Winter is characterized by frost at high altitudes and bitter cold days. Strong North West winds blow through the state during the months of February and March. The state of Nagaland has a monsoon type climate with relative humidity varies from 67% (March) to 88% (October).

#### **Socio-economic condition:**

The state has experienced insurgency as well as inter-ethnic conflict, since the 1950s. However, in past 15 years, the state has experienced less violence and improved annual economic growth rates nearing to 10% on a compounded basis and is graded as one of the fastest growth rate in the region.

#### **Animal Husbandry:**

Agriculture and animal husbandry were the most important economic activities of the state. Since time immemorial livestock farming is one of the most common practices done by the rural farmers for their livelihood. The total livestock population of the state as per the Livestock Census, 2012 is shown in Table-1. In the present scenario the livestock farming such as Dairy, Poultry and Piggery are showing increasing trend in the rural as well as urban areas.

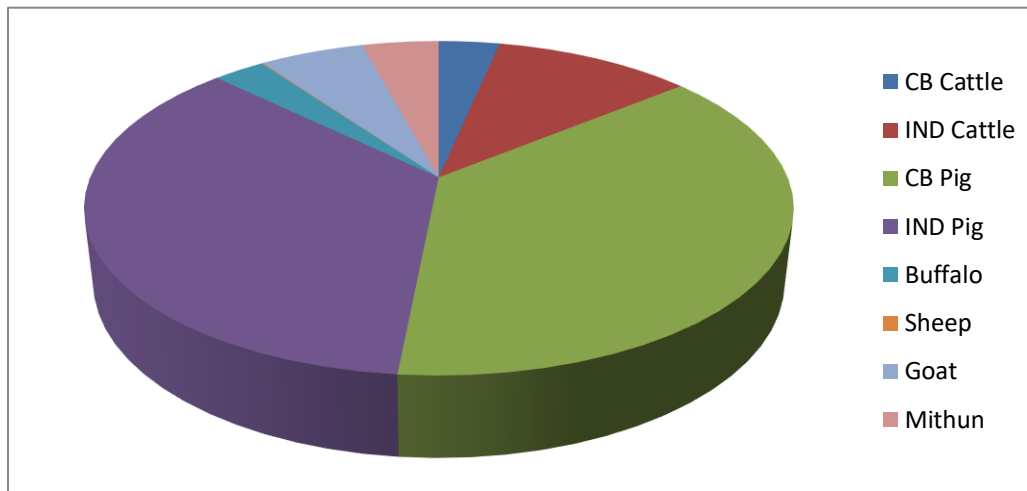
## SECTION-IV

### 1. Livestock population of Nagaland as per 2019 Livestock Census

**Table-1: Species and breed wise livestock population in Nagaland (2019 livestock Census).**

Sl. No.	Cattle		Pig		Buffalo	Sheep	Goat	Mithun
	CB	IND	CB	IND				
<b>Total</b>	18401	59895	207090	197605	15654	361	31602	23123

(Note:-**CB**= Cross Breed, **IND**= Indigenous)



**Fig. I: Graphical representation of species and breed wise livestock distribution in Nagaland (As per Livestock Census 2019)**

### 2. Market rates of livestock and livestock products

**Table-2: Livestock product wise approximate cost in Nagaland.**

Sl. No.	Livestock product	Approximate cost (Rs.)
1.	Pork /kg	220-250
2.	Beef/kg	220-250
3.	Mutton/kg	450-500
4.	Chevon/kg	450-500
5.	Milk/ Litre	40-50

**Table-3: Species and age wise approximate cost of livestock in Nagaland.**

<b>Sl. No.</b>	<b>Species</b>	<b>Age group</b>	<b>Approximate cost (Rs.)</b>
1.	Crossbreed Cattle (Jy/HF)	Male calf up to 1 year	10000-15000
		Female calf up to 1 year	15000-20000
		Adult male	50000-60000
		Heifer up to 2 years	30000-35000
		Bullock up to 2 years	25000-30000
		Cow	50000-60000
		Bullock above 2 years	30000-40000
2.	Indigenous cattle/Non-descriptive	Male calf up to 1 year	10000-15000
		Female calf up to 1 year	10000-15000
		Adult male	20000-25000
		Heifer up to 2 years	15000-20000
		Bullock up to 2 years	20000-25000
		Cow	20000-25000
		Bullock above 2 years	25000-30000
3.	Buffalo	Male Buffalo calf up to 1 year	10000-15000
		Heifer up to 2 year	25000-30000
		Buffalo bull calf up to 2 years	25000-30000
		Buffalo bullock above 2 years	30000-40000
		She Buffalo	40000-45000
4.	Sheep	Male /Female weaned lamb (up to 1 year)	1500-2000
		Male/Female adult sheep (1 year or above)	5000-6000
5.	Goat	Male /Female weaned kid (up to 1 year)	1500-2000
		Male/Female adult goat (1 year or above)	5000-6000
6.	Crossbreed Pig	Male /Female weaned piglet	5000-6000
		Adult Boar	30000-40000
		Adult Sow	30000-40000
7.	Indigenous Pig (Tenyivo)	Male /Female weaned piglet	2000-3000
		Adult Boar	15000-20000
		Adult Sow	15000-20000
8.	Mithun	Adult	60000-80000

## **SECTION-V**

**(Action taken report of AICRP on ADMAS, Nagaland center for the year 2020-21)**

### **1. Collection of pig serum samples for screening:**

The pig serum samples collected from 10 districts of Nagaland during 2020-21 were dispatched to NIVEDI for sero-surveillance.

### **2. Disease Outbreak Investigation:**

Investigation and laboratory validation of disease outbreak was carried out for HS, CSF and ASF under affected districts.

### **3. Reporting of disease outbreaks/Incidence:**

Information regarding the disease outbreaks in different districts was collected from all the concern district diagnostic laboratories and reported to NIVEDI on monthly basis.



## **SECTION-VI**

### **(Details of the Center, PI & Co-PI and Year of start)**

#### **1. Information on AICRP on ADMAS Regional/ Collaborating Center**

- Manpower sanctioned : Nil
- Manpower deployed as per sanctioned posts : Nil
- No. of RAs / SRFs engaged : Nil

Manpower was not sanction as it is only a collaborating center.

**Table -4. Staff Position of collaborating center, Kohima, Nagaland.**

<b>Sl. No.</b>	<b>Name</b>	<b>Designation</b>	<b>District</b>	<b>Date of Joining</b>
1.	Dr. S Amenla Walling	Principal Investigator (PI)	Kohima	2017
2.	Dr. Vikuolie Mezhatu	Co- PI cum Nodal Officer	Kohima	2015
3.	Dr. Khriesamhazo Rhetso	Co- PI	Kohima	2020
3.	Dr. Vilie Medoze	Nodal officer	Longleng	2020
4.	Dr. Manloi Konyak	Nodal officer	Mon	2018
5.	Dr. Kevi Kikhi	Nodal officer	Tuensang	2020
6.	Dr. Morothung	Nodal officer	Wokha	2018
7.	Dr. Wapangsahi	Nodal officer	Mokokchung	2017
8.	Dr. Gwazenlo Tep	Nodal officer	Zunheboto	2020
9.	Dr. Rosou Pohena	Nodal officer	Phek	2018
10.	Dr. Yovino Mekro	Nodal officer	Peren	2017
11.	Dr. Khumjungse	Nodal officer	Kiphire	2018
12.	Dr. Vikshe Sumi	Nodal officer	Dimapur	2017

## **SECTION-VII**

### **1. Report on livestock disease profile of Nagaland (2020-21)**

During the period under report, (Excluding FMD and Poultry diseases) 10 (ten) outbreaks were recorded. The outbreak took place in 8 (eight) districts from the month of May 2020 to March 2021. Diagnosis was done basing on clinical signs and symptoms, PM findings and confirmation by Laboratory test.

**Table-5: District wise livestock disease outbreaks recorded during the year 2020-21**

<b>Sl. No</b>	<b>Name of the disease</b>	<b>Animal species</b>	<b>District</b>	<b>No. of outbreak (s)</b>
<b>1</b>	<b>HS</b>	<b>Mithun, Cattle &amp; Goat</b>	<b>Longleng</b>	<b>1</b>
<b>2</b>	<b>CSF</b>	<b>Swine</b>	<b>Wokha</b>	<b>1</b>
<b>3</b>	<b>CSF</b>	<b>Swine</b>	<b>Dimapur</b>	<b>3</b>
<b>4</b>	<b>CSF</b>	<b>Swine</b>	<b>Peren</b>	<b>1</b>
<b>5</b>	<b>CSF</b>	<b>Swine</b>	<b>Mokokchung</b>	<b>1</b>
<b>6</b>	<b>CSF</b>	<b>Swine</b>	<b>Kohima</b>	<b>1</b>
<b>7</b>	<b>ASF</b>	<b>Swine</b>	<b>Kiphire</b>	<b>1</b>
<b>8</b>	<b>ASF</b>	<b>Swine</b>	<b>Phek</b>	<b>1</b>
<b>Total</b>				<b>10</b>

### **2. Epidemiological Analysis of the diseases**

#### **i. Hemorrhagic Septicemia**

During the period under report, only one outbreak of Hemorrhagic Septicemia was recorded. Out of 11 districts, HS was reported in Longleng district in the month of May 2020. Three species of animals respectively Mithun, cattle and goat were affected. Diagnosis was done by clinical signs and symptoms and confirmation by laboratory test.

**Table-6: Hemorrhagic Septicemia Outbreak in Mithun, cattle and goat**

Sl.no	District	Month	No. of villages affected	OB	TS	AT	D	V
1	Longleng	May	1 (Hukphang)	1	Mithun= 71 Cattle= 32 Goat= 12	Mithun=15 Cattle= 12 Goat= 4	Mithun=9 Cattle=5 Goat=1	NA

(Note: OB=Outbreak, TS= Total susceptible, AT= Affected, D= Death, V= Vaccinated)

## ii. Classical Swine Fever

During the period 2020-21, 7 (seven) outbreaks of Classical Swine Fever was recorded in 5 (five) districts of Nagaland.

**Table-7: Classical Swine Fever outbreak in Swine**

Sl.no	District	Month	No. of villages affected	OB	TS	AT	D	V
1	Wokha	July	1 (Bhandari)	1	290	100	60	185
2	Dimapur	August	1 (Chumukedima)	1	180	12	9	NA
		August	1 (Niuland)	1	250	25	7	80
		September	1 (Suhoi)	1	80	8	4	NA
3	Peren	September	1 (Athibung)	1	NA	NA	NA	NA
4	Mokokchung	September	1 (Mongsenyimti)	1	150	60	28	NA
5	Kohima	September	1 (Thizama)	1	700	12	11	120

## iii. African Swine Fever

In the course of 2020-21, 2 (two) outbreaks of African Swine Fever was reported in two districts (Kiphire and Phek) of Nagaland with high morbidity and mortality.

**Table-8: African Swine Fever outbreak in Swine**

Sl.no	District	Month	No. of villages affected	OB	TS	AT	D	V
1	Kiphire	March	5 (Pungro village, Pungro Town, Cedeyuvong, Chomi & Moya.)	1	3196	1420	820	NA
2	Phek	March	1 (Phek town)	1	1935	39	25	NA

## **SECTION-VIII**

### **Sero-Surveillance**

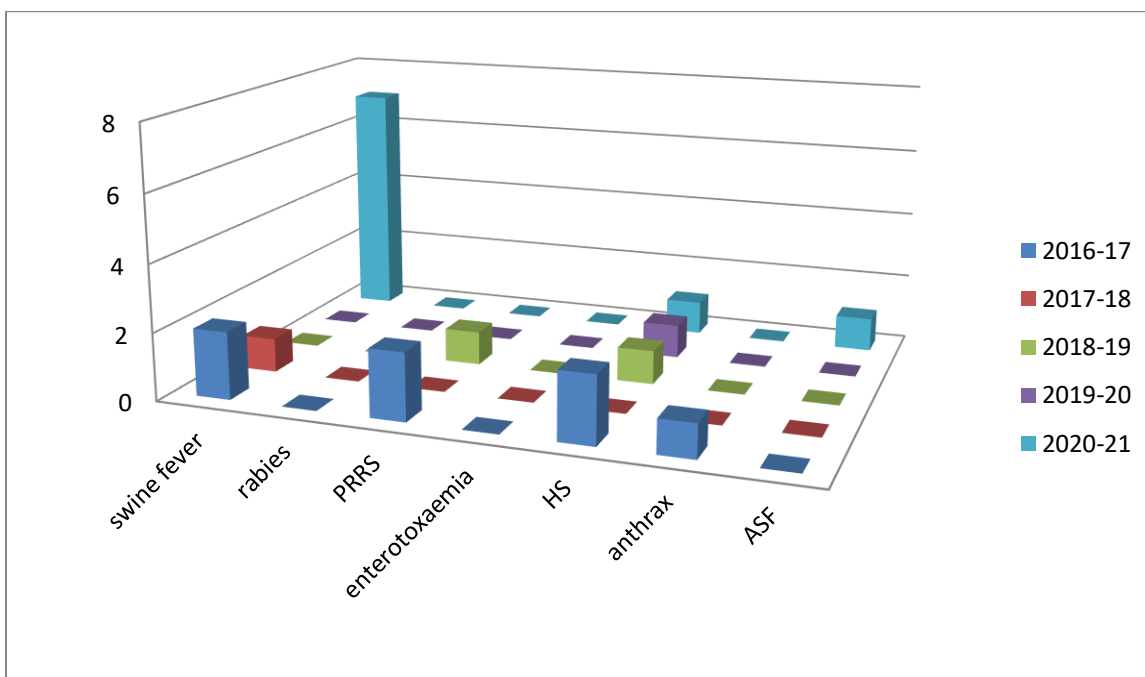
The pig serum samples (279 nos) collected from 10 districts of Nagaland during 2020-21 were dispatched to NIVEDI for sero-surveillance.

## **SECTION-IX**

### **Trends of disease in Nagaland for the past five years (2016-21)**

**Table- 9: Year wise outbreaks of viral and bacterial diseases in Nagaland for the past five years 2016-21 (Excluding FMD & Poultry diseases)**

Sl. No.	Name of the disease	2016-17			2017-18			2018-19			2019-20			2020-21		
		OB	AT	D	OB	AT	D	OB	AT	D	OB	AT	D	OB	AT	D
1.	Swine Fever	2	227	208	1	32	22	0	0	0	0	0	0	7	217	119
2.	Rabies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.	PRRS	2	778	469	0	0	1	1	14	6	0	0	0	0	0	0
4.	Enterotoxaemia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.	HS	2	778	469	0	0	0	1	14	6	1	13 18	2 8 0	1	31	15
6.	Anthrax	1	30	30	0	0	0	0	0	0	0	0	0	0	0	0
7.	ASF	0	0	0	0	0	0	0	0	0	0	0	0	2	1459	845



**Fig. 2: Graphical representation of year wise viral and bacterial disease outbreaks recorded in Nagaland for the past five years (2016-21).**

## **SECTION-X**

### **Economic analysis of major livestock diseases in Nagaland during the year 2020-21**

The economic loss resulting from treatment and death of mithun, cattle, goat and swine due to HS, CSF and ASF outbreak during 2020-21 is approximately Rs. 2,10,09,500. The detailed economic loss accounted during the year 2020-21 is depicted in table 10.

**Table-10: Approximate economic loss incurred due to HS, CSF & ASF outbreak during 2020-21.**

Sl. No.	Disease	Loss due to death @ ₹30,000/- per cattle @ ₹80,000/- per mithun @ ₹6,000/- per goat			Cost of treatment @ ₹ 500/- per animal			Total Loss (₹)
1.	HS	Cattle	Mithun	Goat	Cattle	Mithun	Goat	
		1,50,000	7,20,000	6,000	6,000	7,500	2,000	8,91,500
2	CSF	Swine @ 20,000/- per swine						
		23,80,000			1,08,500			24,88,500
3	ASF	Swine @ 20,000/- per swine						
		1,69,00,000			7,29,500			1,76,29,500
Total								2,10,09,500

Therefore, total economic losses = Rs. 2,10,09,500/- (Rupees Two crore ten lakhs nine thousand five hundred only)

## **SECTION-XI**

### **1. Training attended:**

**No training was attended either by PI nor Co-PI during 2020-21.**

## SECTION-XII

### **1. Acknowledgement**

The AICRP on ADMAS, Nagaland Center, Kohima gratefully acknowledge D.D.G and A.D.G (AH), ICAR, Ministry of Agriculture, Government of India, New Delhi for providing financial assistance and enabling us to successfully implement this project in our state.

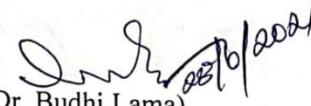
We would like to extend our sincere gratitude to Dr. Parimal Roy, Director ICAR-NIVEDI, Bengaluru and all his scientists especially Dr. S.S. Patil, Dr. K.P. Suresh and Dr. D. Hemadri for their continuous guidance and support in fulfilling the technical programme of the project.


The unit also likes to express its deepest gratitude to all the 11 districts Chief Veterinary Officers and field staff for their tireless support in coordinating and carrying out the project activities.

We would like to acknowledge the help and co-operation rendered by the staff of District Diagnostic Laboratory, Kohima in carrying out laboratory works.

Lastly our sincere gratitude to all village council chairmen and farmers for their support in allowing us to collect serum samples from their animals for sero-surveillance of important livestock diseases.

Kohima,  
The 28<sup>th</sup> June, 2021

  
(Dr. Budhi Lama)  
Director,  
A.H & Vety. Services  
Nagaland  
A.H. & Vety. Services  
Nagaland : Kohima

  
(Dr. S Amenla Walling)  
PI, AICRP on ADMAS,  
Nagaland Center  
**Principal Investigator**  
**AICRP, ADMAS. VETY. & A.H.**  
**Nagaland : Kohima.**

## 2. Appendix

**Table-12: Village wise Outbreak details of bacterial & viral diseases in Nagaland during 2020-21.**

Sl. No.	District Name	Block	Village names	No. of outbreaks	No. of susceptible	No. of attacks	No. of death	No. of vaccination
1	Longleng	Longleng	1 (Hukphang)	1	Mithun= 71 Cattle= 32 Goat= 12	Mithun=15 Cattle= 12 Goat= 4	Mithun=9 Cattle=5 Goat=1	NA
2	Wokha	Bhandari	1 (Bhandari)	1	290	100	60	185
3	Dimapur	Chumukedima	1 (Chumukedima)	1	180	12	9	NA
		Niuland	1 (Niuland)	1	250	25	7	80
		Kuhoboto	1 (Suhoi)	1	80	8	4	NA
4	Peren	Athibung	1 (Athibung)	1	NA	NA	NA	NA
5	Mokokchung	Chuchuyimlang	1 (Mongsenyimti)	1	150	60	28	NA
6	Kohima	Chiephobozou	1 (Thizama)	1	700	12	11	120
7	Kiphire	Pungro	5 (Pungro village, Pungro Town, Cedeyuvong, Chomi & Moya.)	1	3196	1420	820	NA
8	Phek	Phek	1 (Phek town)	1	1935	39	25	NA
<b>Total</b>				<b>10</b>				