LIVESTOCK DISEASE FOREWARNING REPORT - NOVEMBER 2020

POWERED BY ARTIFICIAL INTELLIGENCE

PUBLISHED BY:
DIRECTOR
ICAR-NIVEDI

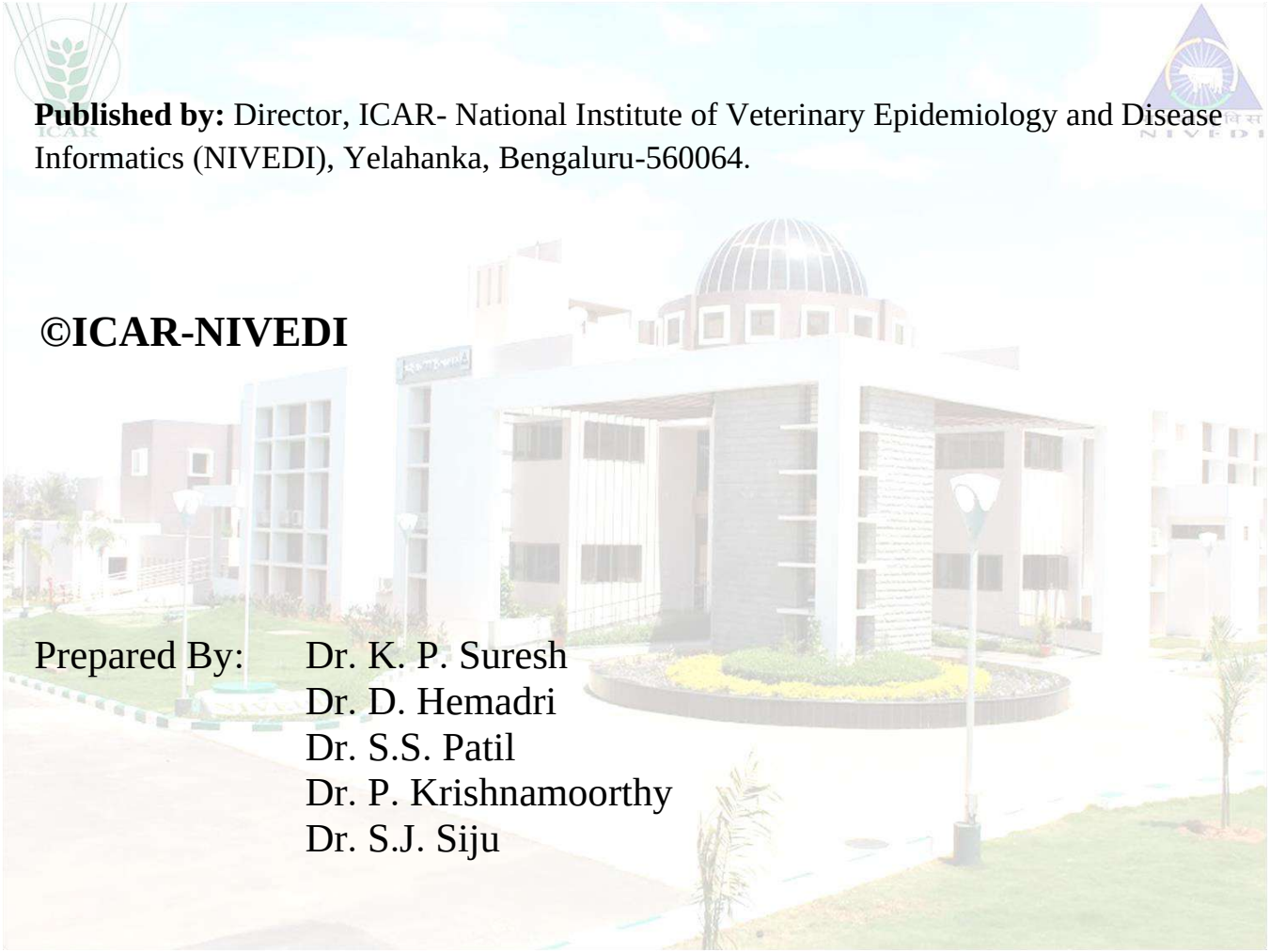
ICAR-National Institute of Veterinary Epidemiology and Disease Informatics
(ICAR-NIVEDI)

SEPTEMBER 2020, Volume 8, Issue 9

Citation: Suresh K P, Hemadri D, Patil S S, Krishnamoorthy P, Siju S J and Roy P (2020). Livestock Disease Forewarning Monthly Bulletin-November 2020, ICAR-NIVEDI, Bengaluru.

Month &Year: September, 2020

Published by: Director, ICAR- National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI), Yelahanka, Bengaluru-560064.



Prepared By: Dr. K. P. Suresh
Dr. D. Hemadri
Dr. S.S. Patil
Dr. P. Krishnamoorthy
Dr. S.J. Siju

Printed by
Naveen Printers, No 155 CHS, 4th Phase, Yelahanka New Town, Bengaluru, Karnataka 560064 E-Mail: naveenprinters04@gmail.com

Front Page Design By: Ms. Apoorva Hemadri

Disclaimer

The forewarnings are based on the retrospective disease data available in the NADRES database. Hence, for those states wherein data is limited/less, the forewarning may not be realistic. Further the forewarning will not take into consideration the control measures that are *in situ*.

Acknowledgement

I would like to acknowledge the constant support and inspiration from Hon'ble Secretary, DARE and Director General, ICAR, Government of India, New Delhi.

I would like to express sincere everlasting gratitude to Hon'ble Deputy Director General (Animal Science) for his constant encouragement, support and guidance.

I would also like to express sincere gratitude to Department of Animal Husbandry and Dairying (DAHD), Ministry of Agriculture and Farmers Welfare, Government of India for providing the livestock population data for preparation of this bulletin.

Animal Husbandry Departments of state governments and also AICRP on ADMAS centres are gratefully acknowledged for the timely submission of reports of livestock disease outbreak data. I am thankful to all the scientific and technical staff of ICAR-NIVEDI for their feedback and support. I sincerely acknowledge the Statistical Division of DAHD for providing the data on livestock census.

Furthermore, I would also like to acknowledge with much appreciation the crucial role of Dr. K. P. Suresh, Principal Scientist and support received from the scientists, Dr. D. Hemadri, Dr. S.S. Patil, Dr. Krishnamoorthy. P, Dr. Siju S.J. & SRF's, JRF's, Young Professionals and other Contractual working in Disease Informatics Lab/Spatial Epidemiology Lab, in preparing this monthly bulletin.

11.09.2020

Director (I/C), ICAR- NIVEDI

निदेशक / Director
राष्ट्रीय पशुरोग जानपदिक एवं सूचना विज्ञान संस्थान
National Institute of Veterinary Epidemiology and Disease Informatics
पोस्ट बाक्स सं-६४५० / Post Box No. 6450
रामगोंडनहल्लि / Ramagondanahalli
बेंगलुरु-५६० ०६४ / Bengaluru-560 064

Contents

1. About the bulletin…

Livestock sector plays a crucial role in the rural economy of India as around 20.5 million people depend upon livestock for their livelihood. Even though the investment in the livestock sector is meagre, tremendous achievements have been observed in the sector during the last decade. As it is an important component in poverty alleviation programmes, continuous emphasis is being laid on this sector for enhancing the quality of the primary and secondary products in the international market, which in turn demands improved animal health. Therefore, livestock development programmes cannot succeed unless a well-organized animal health service is built up and in place for safeguarding the livestock against economically important diseases.

India has made a noteworthy success in the eradication of Rinderpest (RP), CBPP, AHS and Dourine. However, there are several other infectious and non-infectious diseases prevailing in the country causing huge annual economic loss. Prevention, control and eradication of the animal diseases need a thorough understanding of the epidemiology as well their economic impact.

National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI) has the mandate to carry out research activities in the area of veterinary epidemiology and disease informatics. With the eradication of RP successfully, India has not only proved its ability to face the challenges but also to succeed, despite various limitations. Similar efforts are needed to control and eradicate diseases like FMD, PPR, Brucellosis, CSF, HS etc., which cause huge economic loss annually to the livestock industry. To this end, ICAR-NIVEDI has identified 12 priority diseases, based on the past incidence patterns and has built a strong database of these diseases. The database, which is the backbone of the National Animal Disease Referral Expert System (NADRES $_{v2}$), is used for providing monthly livestock disease forewarning, which is compiled in this monthly bulletin to alert the animal husbandry departments, both at the National/state level, to take appropriate control measures. We hope users/stakeholders find this bulletin useful in their quest to control livestock diseases. This forewarning bulletin will assist the field Veterinarians in adopting appropriate preventive and control measures, thereby reducing the occurrence of livestock disease outbreaks. This will help the farmers to fulfil the dream of doubling the farmer's income by 2020.

2. Forewarning Methodology

I. Materials

Livestock disease data

Previous 10 years livestock disease outbreak data retrieved from the NADRES database linked with Risk factors data.

Livestock population data

District wise livestock population data from 20th Livestock census (2019).

Meteorological data

Variables such as precipitation (mm/month), pressure (millibar), relative humidity(%), sea level pressure(millibar), minimum temperature (°C), maximum temperature(°C), wind speed(m/s), vapour pressure (hPa), soil moisture(%), perceptible water(mm), potential evaporation transpiration(mm/day) and cloud (%) were extracted from NCEP-National centre environmental prediction/IMD-Indian meteorological Database/NICRA-National Innovation Climate Resilient Agriculture and other sources for the past five years. Monthly average for the past five years has been calculated and used for modelling.

Remote sensing data

Remote sensing variables such as NDVI-Normalised difference vegetation index, EVI-Enhanced vegetation index and LST - Land surface temperature were calculated using MODIS LANDSAT/IRS satellite images for the past five years. Monthly average for the past five years have been calculated and used. Details of the parameters are tabulated below.

SDS Layer Name	Resolution	Description	Units	Data Type	Scaling Factor
500m_16_days_NDVI	500 sq. m	16 day NDVI average	NDVI	16-bit signed integer	0.0001
500m_16_days_EVI	500 sq. m	16 day EVI average	EVI	16-bit signed integer	0.0001
LST_Day_1km	1 sq. km	Day Land Surface Temperature	Kelvin	16-bit unsinged integer	0.02
Lai_1km	1 sq. km	Leaf Area Index	m2plant/m2ground	8-bit unsigned integer	0.1

Global Land Data Assimilation System (GLDAS) use sophisticated land surface models (LSMs) to ingest satellite and ground-based observations, as parameters, forcing, and data for assimilation, in order to produce enhanced fields of land surface states and fluxes.
GLDAS Noah Land Surface Model containing the environmental parameters such as Potential evaporation rate (W m-2), Pressure (Pa), Specific humidity (kg/kg), Total precipitation rate (kg m-2 s-1), Soil moisture (kg m-2), Temperature (K), Wind speed (m/s) were downloaded and data was extracted.Data was downloaded from the "GLDAS_NOAH025_M_V2.1" Dataset (https://disc.sci.gsfc.nasa.gov/) by setting the start and end dates. The spatial resolution of dataset is 25 sq. km.

II. Weighted outbreak score

The outbreak data for the month of forecasting is extracted from NADRES database for the period of 10 years from current year. Outbreak data of 12 important livestock diseases are considered. The data is aggregated at district level and the weighted score is defined based on the number of outbreaks for each district in each month considering last 10 years. The weightage score was assigned as 0 for less than three number of outbreaks in last 10 years for selected month, score 1 for 3–6 number of outbreaks and 2 for more than 6 outbreaks. This weightage score for each district is labelled as risk variable in building the models and risk maps.

III. Forecasting of weather parameters

Weather forecasting has been one of the most challenging problems around the world because of both its practical value in meteorology and popular sphere for scientific research. Weather forecast systems are among the most complex equation systems that computer has to solve. A great quantity of data, coming from satellites, ground stations and sensors located around our planet send daily information that must be used to foresee the weather situation in next hours and days all around. Weather forecasts provide critical information about future weather. There are various techniques involved in weather forecasting, from relatively simple observation of the sky to highly complex computerized mathematical models. Further, forecast products by Indian Metrological department were used for validation of our forecasts (https://mausam.imd.gov.in/imd_latest/contents/extendedrangeforecast.php).

Following are the basic steps of forecasting process:

1. Determine the forecast's purpose
2. Establish a time horizon
3. Select a forecasting technique
4. Gather and analyse data
5. Perform the forecast
6. Monitor the forecast and use it in prediction of disease

Statistical Models used for forecasting of weather and remotely sensed variables

ARIMA stands for Autoregressive Integrated Moving Average. ARIMA is also known as Box-Jenkins approach. Box and Jenkins claimed that non-stationary data can be made stationary by differencing the series, Y_t. The general model for Y_t is written as,

$$\mathbf{Y_t = \phi_1 Y_{t-1} + \phi_2 Y_{t-2} \ldots \phi_p Y_{t-p} + \epsilon_t + \theta_1 \epsilon_{t-1} + \theta_2 \epsilon_{t-2} + \ldots \theta_q \epsilon_{t-q}}$$

Where, Y_t is the differenced time series value, ϕ and θ are unknown parameters and ϵ are independent identically distributed error terms with zero mean. Here, Y_t is expressed in terms of its past values and the current and past values of error terms.

The ARIMA model combines three basic methods:

- Auto Regression (AR) – In auto-regression the values of a given time series data are regressed on their own lagged values, which is indicated by the "p" value in the model.
- Differencing (I-for Integrated) – This involves differencing the time series data to remove the trend and convert a non-stationary time series to a stationary one. This is indicated by the "d" value in the model. If d = 1, it looks at the difference between two time series entries, if d = 2 it looks at the differences of the differences obtained at d =1, and so forth.
- Moving Average (MA) – The moving average nature of the model is represented by the "q" value which is the number of lagged values of the error term.

This model is called Autoregressive Integrated Moving Average or ARIMA(p,d,q) of Y_t. We will follow the steps enumerated below to build our model. ARIMA models were run in 18 combinations of p, d, q. Based on the minimum AIC value, the order of ARIMA model was selected. This order was used for the prediction of all the weather parameters used in developing disease forewarning models.

IV. Artificial intelligence system of models

Disease outbreak data were aligned with generated risk variables to the respective latitude and longitude, which were subjected to climate-disease modelling. A number of models were fit to aligned data and tested for accuracy in terms of discrimination power. Two regression models, Generalized Linear Models (GLM) and Generalized Additive Models (GAM) and six machine learning algorithms, i.e. Random Forest (RF), Boosted Regression Tree (BRT), Artificial Neural Network (ANN), Multiple Adaptive Regression Spline (MARS), Flexible Discriminant Analysis (FDA) and Classification Tree Analysis (CTA) were employed for disease modelling. Different modelling methods return different types of 'model object' and all these model objects could be used for the predict function to make predictions for any combinations of values of independent variables. Response plots were created to explore and understand model predictions.

The fitted models were assessed for their discriminating power using Receiving Operating Characteristic (ROC) curve, Cohen's Kappa (Heildke Skill Score) and True Skill Statistics (TSS). These measures were used to evaluate the quality of predictions based on presence-absence data. Raster Stack was used to combine the results of individual predictions by different model methods. All the models were assessed for overfitting.

The outcome of best fitted model/s were in probability of disease occurrence and was categorised into 6 risk levels as No risk (NR), Very low risk (V), Low risk (LR), Moderate risk (MR), High risk (HR) and Very high risk (VHR) for enabling the stakeholders to take appropriate control measures by suitably allocating available resources.
Given below is the probability distribution of risk interpretations.

S. No.	Probability of risk	Interpretation
1	0	No risk/No or inadequate data
2	0–0.20	Very low risk
3	0.21–0.40	Low risk
4	0.41–0.60	Moderate risk
5	0.61–0.80	High risk
6	0.8–1.0	Very high risk

3. Accuracy of Prediction

Serial No.	Diseases	Accuracy (%)
1.	Anthrax	99.54
2.	Babesiosis	100.00
3.	Black Quarter	99.85
4.	Blue Tongue	99.23
5.	Enterotoxaemia	99.54
6.	Fasciolosis	98.61
7.	Foot and mouth disease	94.29
8.	Haemorrhagic septicaemia	95.22
9.	Peste des Petits Ruminants	97.22
10.	Sheep & Goat pox	99.69
11.	Swine fever	98.92
12.	Theileriosis	99.85
13.	Trypanosomiasis	97.69

Aggregation and prediction of livestock diseases at district level leading to higher accuracy.

- **Formula Used:** The **Accuracy** of disease prediction was calculated using the following formula.

$$\frac{\text{TP} + \text{TN}}{\text{Total}} * 100$$

TP-True Positive Observations, TN-True Negative Observations, Total- Total observations.

- Internal Accuracy was performed using 10 years of data. Accuracy obtained was >90% for all the diseases predicted.
- Despite the power of climate and disease risk models, considerable uncertainties remain, identifying these uncertainties, highlighting importance of improved data may improve the model accuracy, realism, confidence, together with translating uncertainties in model inputs into uncertainties in model outputs, are important benefits of modelling.

4. Moran's I for clustering of Livestock diseases

Moran's I is a tool measures spatial autocorrelation (feature similarity) based on both feature locations and feature values simultaneously. Given a set of features and an associated attribute, it evaluates whether the pattern expressed is clustered, dispersed, or random. The tool calculates the Moran's I Index value and both a Z score and p-value evaluating the significance of that index. In general, a Moran's Index value near +1.0 indicates clustering while an index value near -1.0 indicates dispersion.

In the case of the Spatial Autocorrelation tool, the null hypothesis states that "there is no spatial clustering of the values associated with the geographic features in the study area". When the *p*-value is small and the absolute value of the *Z* score is large enough that it falls outside of the desired confidence level, the null hypothesis can be rejected. If the index value is greater than 0, the set of features exhibits a clustered pattern. If the value is less than 0, the set of features exhibits a dispersed pattern.

The Moran's I statistic for spatial autocorrelation is given as:

$$I = \frac{n}{S_0} \frac{\sum_{i=1}^{n} \sum_{j=1}^{n} w_{i,j} z_i z_j}{\sum_{i=1}^{n} z_i^2} \quad (1)$$

where z_i is the deviation of an attribute for feature i from its mean $(x_i - \bar{X})$, $w_{i,j}$ is the spatial weight between feature i and j, n is equal to the total number of features, and S_0 is the aggregate of all the spatial weights:

$$S_0 = \sum_{i=1}^{n} \sum_{j=1}^{n} w_{i,j} \quad (2)$$

The z_I-score for the statistic is computed as:

$$z_I = \frac{I - \mathrm{E}[I]}{\sqrt{\mathrm{V}[I]}} \quad (3)$$

where:

$$\mathrm{E}[I] = -1/(n-1) \quad (4)$$

$$\mathrm{V}[I] = \mathrm{E}[I^2] - \mathrm{E}[I]^2 \quad (5)$$

Moran I indices measured for interpreting spatial clustering

State	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
ANDHRA PRADESH													
ARUNACHAL PRADESH													
ASSAM			-0.18			0.02				0.19	-0.14		
BIHAR							-0.08						
GUJARAT								-0.17	0.31				
HARYANA													
HIMACHAL PRADESH													
JAMMU & KASHMIR										0.40			
JHARKHAND		0.16	0.26		0.02	0.18	-0.18		0.12		-0.06	0.16	0.16
KARNATAKA	0.02		-0.08		-0.07		0.05	-0.05	0.11	-0.08		0.39	
KERALA	-0.09							0.08			0.18		
MADHYA PRADESH							-0.11	0.17	-0.08				
MAHARASHTRA								0.30	0.35				
MANIPUR						-0.17					-0.05		
MEGHALAYA			-0.44				0.23	-0.07			-0.42		
MIZORAM													
NAGALAND											0.52		
ODISHA			0.18				0.31		0.05				
PUNJAB													
RAJASTHAN							-0.11						
TAMIL NADU	0.06						-0.10						
TRIPURA							-0.67						
UTTAR PRADESH						-0.06							-0.03
UTTARAKHAND													
WEST BENGAL			-0.02				0.30	0.06	-0.19			0.35	-0.16

5. Forewarning of livestock disease for the month of November 2020

i) District wise Livestock Disease forewarning:

District wise Livestock Disease forewarning for November 2020: Andaman and Nicobar

Districts of Andaman and Nicobar	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Nicobars	NR	NR	NR	VLR	NR	VHR	VLR	NR	NR	NR	NR	NR	NR
North & Middle Andaman	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
South Andaman	NR	NR	NR	NR	NR	VHR	NR	NR	VLR	NR	NR	NR	NR

If vaccination is already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Andhra Pradesh

Districts of Andhra Pradesh	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Anantapur	NR	NR	NR	HR	NR	NR	HR	VHR	VLR	NR	NR	NR	NR
Chittoor	NR	NR	NR	VLR	NR	NR	HR	NR	VLR	NR	NR	NR	NR
East Godavari	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Guntur	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Krishna	NR	NR	NR	VLR	VHR	NR	VLR	NR	NR	NR	NR	NR	NR
Kurnool	VHR	NR	NR	LR	NR	NR	HR	NR	NR	NR	NR	NR	NR
Prakasam	NR	NR	NR	VLR	VHR	NR	VLR	NR	NR	VHR	NR	NR	NR
Sri Potti Sriramulu Nellore	NR	NR	NR	VLR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Srikakulam	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Visakhapatnam	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Vizianagaram	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
West Godavari	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Y.S.R.	NR	NR	NR	LR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR

If vaccination is already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Arunachal Pradesh

Districts of Arunachal Pradesh	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Anjaw	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Changlang	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Dibang Valley	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
East Kameng	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
East Siang	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Kurung Kumey	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lohit	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lower Dibang Valley	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Lower Subansiri	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Papum Pare	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Tawang	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Tirap	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Upper Siang	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Upper Subansiri	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
West Kameng	NR	VHR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
West Siang	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Assam

Districts of Assam	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Baksa	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Barpeta	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Bongaigaon	NR	NR	NR	NR	NR	VHR	VLR	NR	VLR	NR	VHR	NR	NR
Cachar	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chirang	NR	NR	VHR	NR	NR	VHR	VLR	NR	VLR	NR	NR	NR	NR
Darrang	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Dhemaji	NR	NR	VHR	NR	NR	VHR	VLR	NR	NR	NR	VHR	VHR	NR
Dhubri	NR	NR	VHR	NR	NR	VHR	VLR	NR	NR	NR	NR	NR	NR
Dibrugarh	NR	NR	NR	NR	NR	VHR	VLR	NR	VHR	NR	NR	NR	NR
Dima Hasao	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	VHR	NR	NR
Goalpara	NR	NR	VHR	NR	NR	VHR	VLR	NR	NR	NR	VHR	NR	NR
Golaghat	NR	NR	NR	NR	NR	NR	NR	NR	NR	VHR	NR	NR	NR
Hailakandi	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Jorhat	NR	NR	NR	NR	NR	NR	VLR	NR	NR	VHR	NR	NR	NR
Kamrup	NR	NR	NR	NR	NR	VHR	NR	NR	HR	NR	NR	HR	NR
Kamrup Metropolitan	NR	NR	NR	NR	NR	VHR	VLR	NR	NR	NR	NR	VHR	NR
Karbi Anglong	NR	NR	VHR	NR	NR	NR	VLR	NR	NR	NR	VHR	NR	NR
Karimganj	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Kokrajhar	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Lakhimpur	NR	NR	NR	NR	NR	VHR	NR	NR	NR	NR	VHR	NR	NR
Morigaon	NR	NR	VHR	NR	NR	VHR	NR	NR	NR	NR	NR	NR	NR

Continue

Districts of Assam	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Nagaon	NR	NR	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR
Nalbari	NR	NR	VHR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sivasagar	NR	NR	VHR	NR	NR	VHR	VLR	NR	NR	NR	VHR	NR	NR
Sonitpur	NR	NR	NR	NR	NR	VHR	VLR	NR	NR	VHR	VHR	NR	NR
Tinsukia	NR	NR	NR	NR	VHR	NR	NR	NR	NR	NR	VHR	NR	NR
Udalguri	NR	NR	VHR	NR	NR	VHR	VLR	NR	VLR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Bihar

Districts of Bihar	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Araria	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Arwal	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	VHR
Aurangabad	NR	NR	NR	NR	NR	NR	LR	NR	NR	NR	NR	NR	NR
Banka	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Begusarai	NR	NR	NR	VLR	NR	NR	HR	NR	VLR	NR	NR	NR	NR
Bhagalpur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Bhojpur	NR	VHR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	VHR
Buxar	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Darbhanga	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Gaya	NR	NR	NR	NR	NR	NR	HR	NR	NR	NR	NR	NR	NR
Gopalganj	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Jamui	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Jehanabad	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Kaimur (Bhabua)	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Katihar	NR	NR	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR
Khagaria	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Kishanganj	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lakhisarai	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Madhepura	NR	NR	NR	VLR	NR	NR	VHR	NR	NR	NR	NR	NR	NR
Madhubani	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Munger	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Muzaffarpur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

Continue

Districts of Bihar	Livestock Diseases												
	Anthrax	**Babesiosis**	**BQ**	**BT**	**ET**	**Fasciolosis**	**FMD**	**HS**	**PPR**	**S&G Pox**	**SF**	**Theileriosis**	**Trypanosomiasis**
Nalanda	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Nawada	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Pashchim Champaran	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Patna	NR	NR	NR	VLR	NR	NR	VHR	NR	NR	NR	NR	NR	NR
Purba Champaran	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Purnia	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Rohtas	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Saharsa	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Samastipur	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Saran	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Sheikhpura	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Sheohar	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sitamarhi	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Siwan	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Supaul	NR	NR	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR
Vaishali	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR

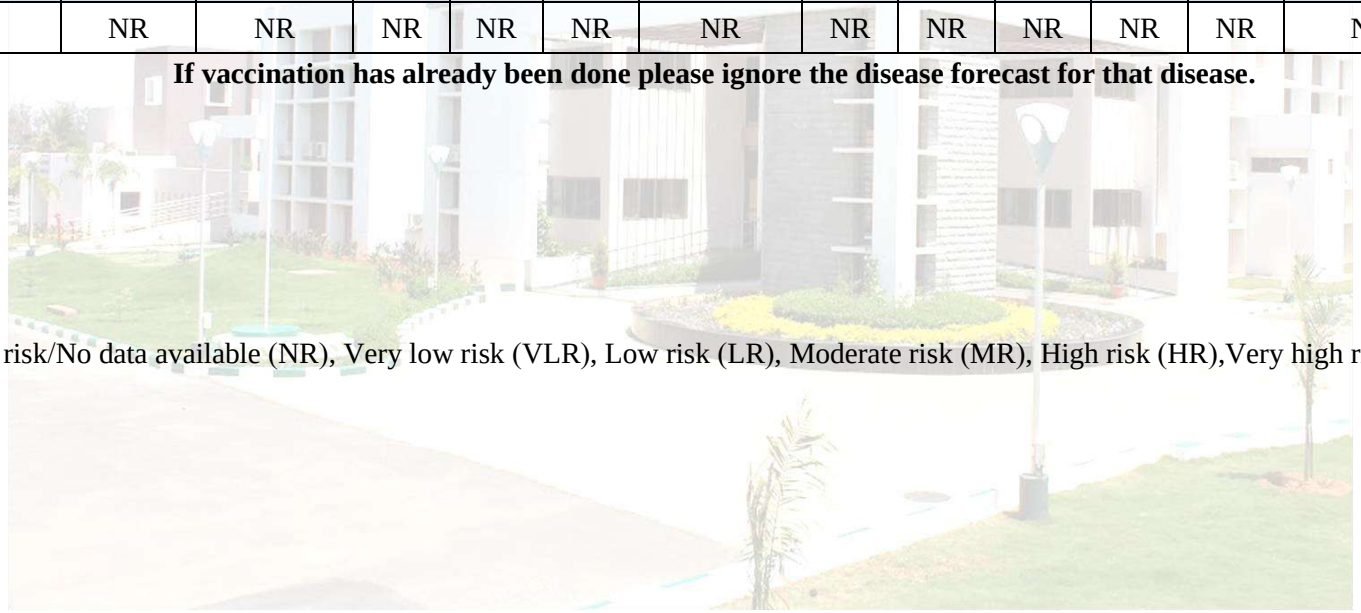
If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Chandigarh

Districts of Chandigarh	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Chandigarh	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.



*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Chhattisgarh

Districts of Chhattisgarh	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Bastar	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Bijapur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Bilaspur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Dakshin Bastar Dantewada	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Dhamtari	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Durg	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Janjgir-champa	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Jashpur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Kabeerdham	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Korba	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Koriya	VHR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mahasamund	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Narayanpur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Raigarhh	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Raipur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Rajnandgaon	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Surguja	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Uttar Bastar Kanker	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Dadra and Nagar Haveli

Districts of Dadra and Nagar Haveli	Livestock Diseases												
	Anthrax	**Babesiosis**	**BQ**	**BT**	**ET**	**Fasciolosis**	**FMD**	**HS**	**PPR**	**S&G Pox**	**SF**	**Theileriosis**	**Trypanosomiasis**
Dadra and Nagar Haveli	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

If vaccination is already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Daman and Diu

Districts of Daman and Diu	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Daman	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Diu	NR	NR	NR	VLR	NR	NR	NR	NR	VLR	NR	NR	NR	NR

If vaccination is already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Goa

Districts of Goa	Livestock Diseases												
	Anthrax	**Babesiosis**	**BQ**	**BT**	**ET**	**Fasciolosis**	**FMD**	**HS**	**PPR**	**S&G Pox**	**SF**	**Theileriosis**	**Trypanosomiasis**
North Goa	NR	VHR	NR	NR	NR	NR	HR	NR	NR	NR	NR	NR	NR
South Goa	NR	NR	NR	VLR	NR	NR	HR	NR	NR	NR	NR	NR	NR

If vaccination is already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Gujarat

Districts of Gujarat	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Ahmadabad	NR	NR	NR	VLR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Amreli	NR	NR	NR	VLR	NR	NR	NR	NR	VHR	NR	NR	NR	NR
Anand	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Banas Kantha	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Bharuch	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Bhavnagar	NR	NR	NR	VLR	NR	NR	VLR	VHR	VHR	NR	NR	NR	NR
Dohad	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Gandhinagar	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	VHR	VHR
Jamnagar	NR	NR	NR	VLR	NR	NR	NR	NR	VLR	NR	NR	NR	NR
Junagadh	NR	NR	NR	VLR	VHR	NR	VLR	NR	HR	NR	NR	NR	NR
Kachchh	NR	NR	NR	VLR	NR	NR	NR	NR	VLR	NR	NR	NR	NR
Kheda	NR	NR	NR	NR	NR	NR	VLR	NR	MR	NR	NR	NR	NR
Mahesana	NR	NR	NR	NR	NR	NR	VLR	HR	VLR	NR	NR	NR	NR
Narmada	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Navsari	NR	NR	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR
Panch Mahals	NR	NR	NR	VLR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Patan	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Porbandar	NR	NR	NR	VLR	NR	NR	NR	NR	VLR	NR	NR	NR	NR
Rajkot	NR	NR	NR	NR	NR	NR	NR	NR	VHR	NR	NR	NR	NR
Sabar Kantha	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Surat	NR	NR	NR	NR	NR	NR	VLR	VHR	VLR	NR	NR	NR	NR
Surendranagar	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Tapi	NR	NR	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR
The Dangs	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Vadodara	NR	NR	NR	VLR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Valsad	NR	NR	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Haryana

Districts of Haryana	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Ambala	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Bhiwani	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Faridabad	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Fatehabad	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Gurgaon	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Hisar	NR	VHR	NR	NR	NR	NR	NR	NR	NR	VHR	VHR	NR	NR
Jhajjar	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Jind	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Kaithal	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Karnal	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Kurukshetra	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mahendragarh	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Mewat	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Palwal	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Panchkula	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Panipat	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Rewari	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Rohtak	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	VHR	NR	NR
Sirsa	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sonipat	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Yamunanagar	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Himachal Pradesh

Districts of Himachal pradesh	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Bilaspur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Chamba	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Hamirpur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Kangra	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Kinnaur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	VHR	NR	NR	NR
Kullu	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Lahul & Spiti	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mandi	NR	NR	NR	NR	NR	NR	VLR	VHR	NR	NR	NR	NR	NR
Shimla	NR	NR	NR	NR	NR	NR	VLR	VHR	NR	NR	NR	NR	NR
Sirmaur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Solan	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Una	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Jammu and Kashmir

Districts of Jammu and Kashmir	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Anantnag	NR	NR	NR	NR	NR	NR	NR	NR	NR	VHR	NR	NR	NR
Badgam	NR	NR	NR	NR	NR	NR	NR	NR	NR	VHR	NR	NR	NR
Bandipore	NR	NR	NR	NR	NR	NR	VLR	NR	NR	VHR	NR	NR	NR
Baramula	NR	NR	NR	NR	NR	NR	VLR	NR	NR	VHR	NR	NR	NR
Doda	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Ganderbal	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Jammu	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Kargil	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Kathua	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Kishtwar	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Kulgam	NR	NR	NR	NR	VHR	NR	NR	NR	NR	VHR	NR	NR	NR
Kupwara	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Leh(Ladakh)	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Pulwama	NR	NR	NR	NR	NR	NR	VLR	NR	NR	VHR	NR	NR	NR
Punch	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Rajouri	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Ramban	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Reasi	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Samba	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Shupiyan	NR	NR	NR	VLR	NR	NR	NR	NR	NR	VHR	NR	NR	NR
Srinagar	NR	NR	NR	NR	NR	NR	LR	NR	NR	VHR	NR	NR	NR
Udhampur	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Jharkhand

Districts of Jharkhand	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Bokaro	NR	VHR	NR	NR	NR	VHR	VHR	NR	HR	NR	HR	VHR	VHR
Chatra	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Deoghar	NR	VHR	NR	NR	NR	VHR	VHR	NR	VHR	NR	NR	VHR	VHR
Dhanbad	NR	VHR	NR	VLR	NR	VHR	MR	NR	VHR	NR	HR	VHR	VHR
Dumka	NR	VHR	HR	VLR	NR	VHR	VHR	VHR	VHR	NR	NR	VHR	VHR
Garhwa	NR	VHR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	VHR	VHR
Giridih	NR	VHR	NR	VLR	NR	VHR	HR	NR	LR	NR	NR	VHR	VHR
Godda	NR	VHR	VHR	NR	NR	VHR	VLR	NR	HR	NR	NR	VHR	VHR
Gumla	NR	VHR	NR	VLR	NR	VHR	HR	NR	HR	NR	NR	VHR	VHR
Hazaribagh	NR	VHR	VHR	LR	NR	VHR	LR	NR	VLR	NR	NR	VHR	VHR
Jamtara	NR	VHR	NR	VLR	NR	VHR	MR	NR	HR	NR	NR	VHR	VHR
Khunti	NR	VHR	NR	NR	NR	VHR	HR	NR	VHR	VHR	NR	VHR	VHR
Koderma	VHR	VHR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	VHR	VHR
Latehar	NR	VHR	NR	VLR	NR	VHR	VLR	NR	VLR	NR	NR	VHR	VHR
Lohardaga	NR	VHR	NR	VLR	VHR	VHR	MR	VHR	VHR	NR	VHR	VHR	VHR
Pakur	NR	VHR	MR	NR	NR	VHR	HR	VHR	HR	NR	NR	VHR	VHR
Palamu	NR	VHR	NR	VLR	NR	VHR	VHR	NR	LR	NR	NR	VHR	VHR
Pashchimi Singhbhum	NR	VHR	NR	NR	NR	VHR	MR	NR	LR	NR	NR	NR	VHR
Purbi Singhbhum	NR	VHR	NR	VLR	NR	VHR	VHR	VHR	VHR	NR	NR	VHR	VHR
Ramgarh	NR	NR	NR	VLR	NR	VHR	NR	NR	NR	NR	NR	NR	NR
Ranchi	VHR	VHR	NR	VLR	VHR	VHR	VHR	NR	VHR	NR	HR	VHR	VHR
Sahibganj	NR	VHR	VHR	VLR	VHR	VHR	VHR	VHR	VHR	NR	VHR	VHR	VHR
Seraikela - Kharsawan	NR	VHR	NR	NR	NR	VHR	VLR	NR	NR	NR	NR	VHR	VHR
Simdega	NR	VHR	NR	NR	NR	VHR	VHR	NR	VHR	NR	VHR	VHR	VHR

If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Karnataka

Districts of Karnataka	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Bagalkot	NR	NR	VHR	HR	VHR	NR	LR	NR	VLR	NR	NR	NR	NR
Bangalore	NR	VHR	NR	VLR	NR	NR	VHR	NR	VLR	VHR	VHR	VHR	NR
Bangalore Rural	VHR	NR	MR	VLR	NR	NR	VHR	NR	MR	NR	NR	VHR	NR
Belgaum	NR	NR	NR	LR	NR	NR	LR	NR	NR	NR	NR	NR	NR
Bellary	VHR	NR	NR	VHR	NR	NR	HR	NR	VLR	NR	NR	NR	NR
Bidar	NR	NR	NR	NR	NR	NR	LR	NR	VLR	NR	NR	NR	NR
Bijapur	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Chamarajanagar	HR	NR	VHR	VLR	NR	NR	VHR	NR	VLR	NR	NR	NR	NR
Chikkaballapura	HR	NR	NR	HR	VHR	NR	HR	NR	VHR	MR	NR	NR	NR
Chikmagalur	NR	NR	MR	VLR	NR	NR	HR	VHR	VLR	MR	NR	NR	NR
Chitradurga	HR	NR	NR	VHR	VHR	NR	MR	VHR	VLR	NR	NR	NR	NR
Dakshina Kannada	NR	NR	NR	NR	NR	NR	VHR	NR	VLR	NR	NR	NR	NR
Davanagere	VHR	NR	NR	HR	NR	NR	VLR	VHR	NR	NR	NR	NR	NR
Dharwad	NR	NR	NR	VLR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Gadag	NR	NR	NR	VLR	HR	NR	MR	VHR	NR	VHR	NR	NR	NR

Continue

Districts of Karnataka	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Gulbarga	NR	NR	NR	VLR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Hassan	NR	NR	VHR	VLR	NR	NR	HR	NR	VLR	VHR	NR	NR	NR
Haveri	NR	NR	MR	VLR	VHR	NR	LR	NR	VLR	NR	NR	NR	NR
Kodagu	NR	NR	NR	NR	NR	NR	VHR	VHR	VLR	NR	NR	NR	NR
Kolar	NR	NR	NR	VLR	VHR	NR	VHR	VHR	VHR	NR	NR	NR	NR
Koppal	VHR	NR	VHR	VHR	VHR	NR	LR	VHR	VLR	NR	NR	NR	NR
Mandya	NR	NR	NR	VLR	NR	NR	VHR	VHR	LR	NR	NR	NR	NR
Mysore	NR	NR	VHR	VLR	VHR	NR	HR	VHR	LR	MR	NR	NR	NR
Raichur	NR	NR	NR	VLR	HR	NR	LR	NR	VLR	NR	NR	NR	NR
Ramanagara	NR	NR	NR	VLR	NR	NR	VHR	NR	MR	NR	NR	VHR	NR
Shimoga	NR	NR	VHR	VLR	VHR	NR	MR	VHR	NR	NR	NR	NR	NR
Tumkur	VHR	NR	VHR	HR	VHR	NR	VHR	VHR	HR	VHR	NR	NR	NR
Udupi	NR	NR	NR	NR	NR	NR	MR	VHR	VLR	NR	NR	NR	NR
Uttara Kannada	NR	NR	MR	NR	HR	NR	HR	VHR	VLR	NR	NR	NR	NR
Yadgir	NR	NR	VHR	VLR	MR	NR	HR	NR	VLR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Kerala

Districts of Kerala	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Alappuzha	NR	NR	NR	VLR	NR	NR	VHR	NR	VHR	NR	NR	NR	NR
Ernakulam	VHR	VHR	NR	NR	NR	NR	VHR	HR	NR	NR	NR	VHR	NR
Idukki	NR	NR	NR	NR	NR	NR	VHR	NR	VLR	NR	VHR	VHR	NR
Kannur	VHR	NR	NR	NR	NR	NR	VHR	NR	NR	NR	NR	NR	NR
Kasaragod	NR	NR	NR	NR	NR	NR	HR	NR	NR	NR	NR	NR	NR
Kollam	NR	NR	NR	NR	NR	NR	VHR	HR	VLR	NR	NR	NR	NR
Kottayam	VHR	NR	NR	VLR	NR	NR	VHR	VHR	NR	NR	VHR	VHR	NR
Kozhikode	NR	NR	NR	NR	NR	NR	VHR	NR	NR	NR	NR	VHR	NR
Malappuram	NR	NR	NR	NR	NR	NR	VHR	NR	NR	NR	NR	VHR	NR
Palakkad	NR	NR	NR	NR	NR	NR	VHR	NR	VLR	VHR	VHR	NR	NR
Pathanamthitta	NR	NR	NR	NR	NR	NR	VHR	NR	VLR	NR	NR	NR	NR
Thiruvananthapuram	NR	NR	NR	VLR	NR	NR	VHR	VHR	VHR	NR	NR	VHR	NR
Thrissur	NR	NR	NR	VLR	NR	NR	VHR	NR	NR	NR	VHR	NR	NR
Wayanad	NR	NR	NR	NR	NR	NR	VHR	NR	NR	NR	NR	VHR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Lakshadweep

Districts of Lakshadweep	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Lakshadweep	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Madhya Pradesh

Districts of Madhya Pradesh	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Alirajpur	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Anuppur	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Ashoknagar	NR	NR	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR
Balaghat	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Barwani	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Betul	NR	NR	VHR	NR	NR	NR	HR	VHR	VLR	NR	NR	NR	NR
Bhind	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Bhopal	NR	NR	NR	NR	NR	NR	HR	NR	NR	NR	NR	NR	NR
Burhanpur	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Chhatarpur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Chhindwara	NR	NR	NR	NR	NR	NR	HR	VHR	HR	NR	NR	NR	NR
Damoh	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Datia	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	VHR	NR	NR
Dewas	NR	NR	NR	NR	NR	NR	NR	VHR	NR	NR	NR	NR	NR
Dhar	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Dindori	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
East Nimar	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Guna	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Gwalior	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Harda	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Hoshangabad	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Indore	NR	NR	NR	NR	NR	NR	VLR	VHR	VHR	NR	NR	NR	NR
Jabalpur	NR	NR	NR	VLR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Jhabua	NR	NR	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	VHR
Katni	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR

Continue

Districts of Madhya Pradesh	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Khargone (West Nimar)	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Mandla	NR	NR	NR	NR	NR	NR	HR	NR	NR	NR	NR	NR	NR
Mandsaur	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Morena	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Narsimhapur	NR	NR	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR
Neemuch	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Panna	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Raisen	NR	NR	NR	NR	NR	NR	VLR	VHR	NR	NR	NR	NR	NR
Rajgarh	NR	NR	NR	NR	NR	NR	VLR	MR	NR	NR	NR	NR	NR
Ratlam	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Rewa	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sagar	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Satna	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Sehore	NR	NR	NR	NR	NR	NR	VLR	VHR	NR	NR	NR	NR	NR
Seoni	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Shahdol	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	VHR
Shajapur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Sheopur	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Shivpuri	NR	NR	NR	NR	NR	NR	VHR	NR	NR	NR	NR	NR	NR
Sidhi	NR	NR	NR	NR	NR	NR	MR	NR	NR	NR	NR	NR	NR
Singrauli	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Tikamgarh	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Ujjain	NR	NR	NR	NR	NR	NR	MR	NR	NR	NR	NR	NR	NR
Umaria	NR	NR	NR	NR	NR	NR	HR	NR	VLR	NR	NR	NR	NR
Vidisha	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

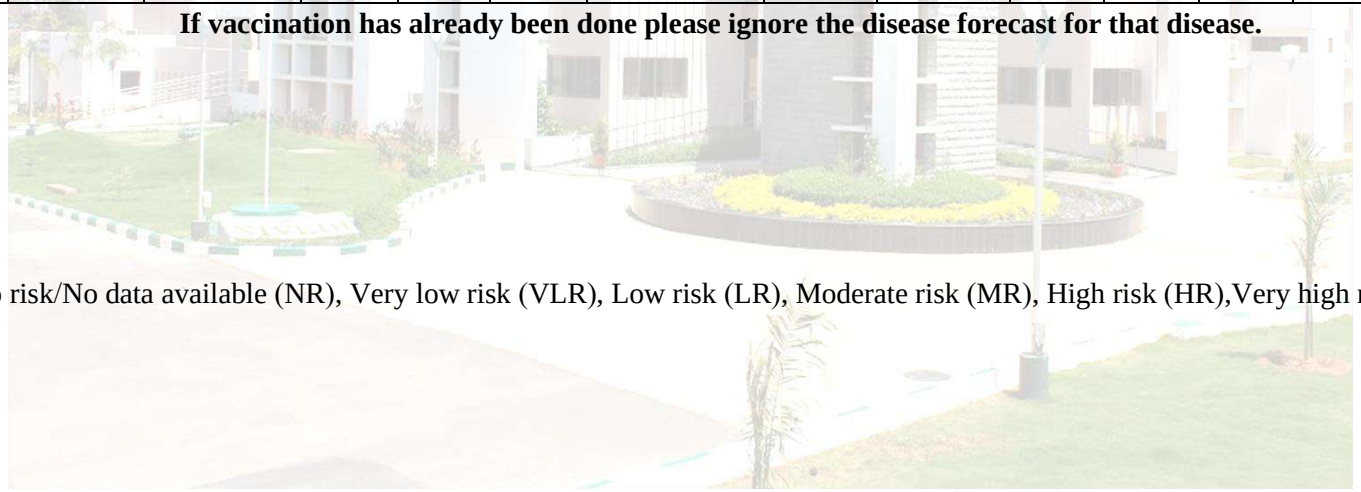
District wise Livestock Disease forewarning for November 2020: Maharashtra

Districts of Maharastra	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Ahmadnagar	NR	NR	NR	VLR	NR	NR	NR	VHR	HR	NR	NR	NR	NR
Akola	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Amravati	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Aurangabad	NR	NR	NR	NR	NR	NR	VLR	NR	VHR	NR	NR	NR	NR
Bhandara	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Bid	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Buldana	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Chandrapur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Dhule	NR	NR	VHR	NR	NR	NR	NR	VHR	VHR	NR	NR	NR	NR
Gadchiroli	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Gondiya	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Hingoli	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Jalgaon	NR	NR	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR
Jalna	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Kolhapur	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	VHR	NR	NR	NR
Latur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Mumbai	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mumbai Suburban	NR	NR	NR	VLR	NR	NR	NR	NR	VLR	NR	NR	NR	NR
Nagpur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Nanded	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Nandurbar	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Nashik	NR	NR	NR	VLR	NR	NR	VLR	VHR	VHR	NR	NR	NR	NR
Osmanabad	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Parbhani	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Pune	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR

Continue

Districts of Maharastra	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Raigarh	NR	NR	NR	VLR	NR	NR	NR	VHR	NR	NR	NR	NR	NR
Ratnagiri	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sangli	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	VHR	NR	NR	NR
Satara	NR	NR	NR	VLR	NR	NR	MR	NR	NR	NR	NR	NR	NR
Sindhudurg	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Solapur	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Thane	NR	NR	NR	NR	NR	NR	VLR	VHR	NR	NR	NR	NR	NR
Wardha	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Washim	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Yavatmal	NR	NR	NR	NR	NR	NR	VLR	VHR	NR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.



*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Manipur

Districts of Manipur	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Bishnupur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Chandel	NR	NR	NR	NR	NR	NR	VLR	NR	NR	VHR	VHR	NR	NR
Churachandpur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Imphal East	NR	NR	VHR	NR	NR	VHR	NR	VHR	NR	NR	VHR	NR	NR
Imphal West	NR	NR	NR	NR	NR	VHR	VLR	NR	NR	NR	NR	NR	NR
Senapati	NR	NR	NR	NR	NR	VHR	VLR	VHR	NR	NR	VHR	NR	NR
Tamenglong	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	VHR	NR	NR
Thoubal	NR	NR	NR	NR	NR	VHR	NR	NR	NR	NR	VHR	NR	NR
Ukhrul	NR	NR	NR	NR	NR	NR	VLR	VHR	NR	NR	VHR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Meghalaya

Districts of Meghalaya	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
East Garo Hills	NR	NR	NR	VLR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
East Jaintia Hills	NR	NR	VHR	VLR	NR	NR	VLR	VHR	VLR	NR	VHR	NR	NR
East Khasi Hills	NR	NR	NR	NR	NR	NR	VHR	NR	NR	NR	VHR	NR	NR
Jaintia Hills	NR	NR	NR	NR	NR	NR	HR	NR	NR	NR	NR	NR	NR
North Garo Hills	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Ribhoi	NR	NR	NR	NR	NR	NR	HR	NR	NR	NR	NR	NR	NR
South Garo Hills	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Southwest Garo Hills	NR	NR	VHR	VLR	NR	VHR	VLR	NR	NR	NR	VHR	NR	NR
Southwest Khasi Hills	NR	NR	NR	VLR	NR	NR	VLR	VHR	VLR	NR	NR	NR	NR
West Garo Hills	NR	NR	VHR	NR	NR	NR	VHR	VHR	NR	NR	VHR	NR	NR
West Khasi Hills	NR	NR	VHR	NR	NR	NR	VHR	NR	NR	NR	VHR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Mizoram

Districts of Mizoram	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Aizawl	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Champhai	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Kolasib	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Lawngtlai	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Lunglei	NR	NR	NR	NR	NR	NR	VHR	NR	NR	NR	NR	NR	NR
Mamit	NR	NR	NR	NR	NR	NR	VLR	NR	NR	VHR	NR	NR	NR
Saiha	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Serchhip	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Nagaland

Districts of Nagaland	Livestock Diseases												
	Anthrax	**Babesiosis**	**BQ**	**BT**	**ET**	**Fasciolosis**	**FMD**	**HS**	**PPR**	**S&G Pox**	**SF**	**Theileriosis**	**Trypanosomiasis**
Dimapur	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	VHR	NR	NR
Kiphire	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Kohima	NR	NR	NR	NR	NR	NR	HR	NR	VLR	NR	VHR	NR	NR
Longleng	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Mokokchung	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Mon	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Peren	NR	NR	NR	NR	NR	NR	HR	NR	NR	NR	VHR	NR	NR
Phek	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Tuensang	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Wokha	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Zunheboto	NR	NR	NR	NR	NR	NR	LR	NR	VLR	NR	HR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: NCT of Delhi

Districts of NCT of Delhi	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Central	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
East	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
New Delhi	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
North	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
North East	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
North West	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
South	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
South West	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
West	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

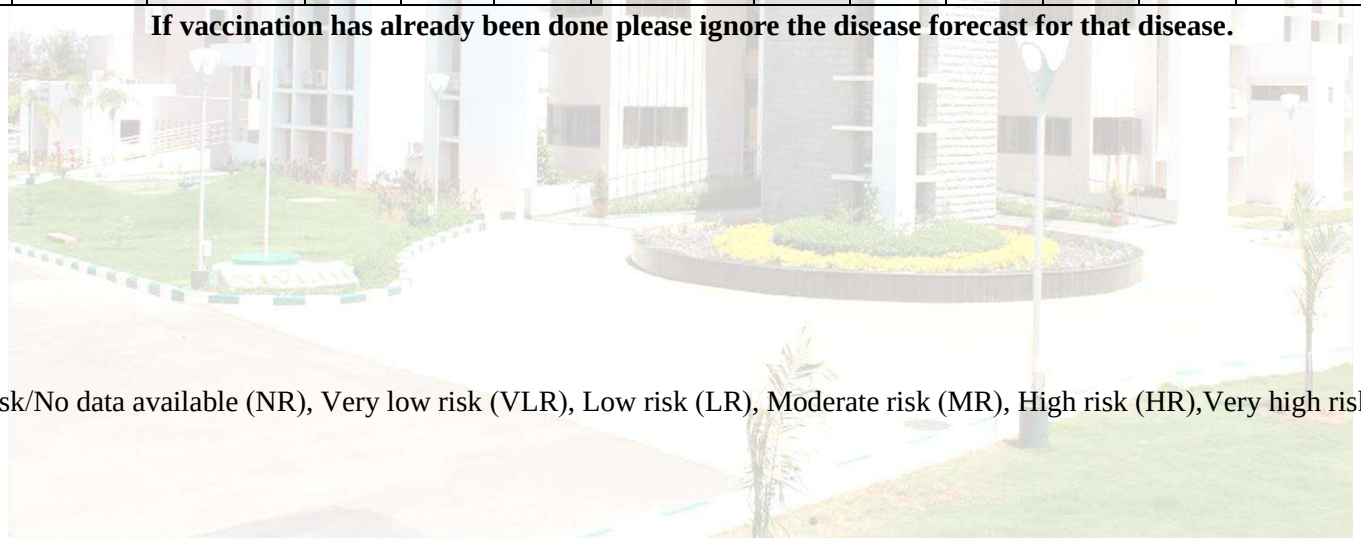
District wise Livestock Disease forewarning for November 2020: Odisha

Districts of Odisha	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Anugul	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Balangir	NR	NR	NR	VLR	NR	NR	NR	NR	VLR	NR	NR	NR	NR
Baleshwar	NR	NR	NR	VLR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Bargarh	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Baudh	NR	NR	NR	NR	NR	VHR	NR	NR	VLR	NR	NR	NR	NR
Bhadrak	NR	NR	NR	NR	NR	VHR	VLR	NR	VLR	NR	NR	NR	NR
Cuttack	NR	NR	VHR	VLR	VHR	NR	VHR	NR	VLR	NR	NR	NR	NR
Debagarh	NR	NR	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR
Dhenkanal	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Gajapati	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Ganjam	NR	NR	VHR	VLR	NR	NR	VLR	VHR	VHR	NR	NR	NR	NR
Jagatsinghapur	NR	NR	NR	NR	NR	NR	VHR	NR	VHR	NR	NR	NR	NR
Jajapur	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Jharsuguda	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Kalahandi	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Kandhamal	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Kendrapara	NR	NR	NR	NR	NR	NR	VLR	VHR	HR	NR	NR	NR	NR
Kendujhar	NR	NR	NR	NR	NR	NR	VLR	NR	VHR	NR	NR	NR	NR
Khordha	NR	NR	VHR	VLR	NR	NR	VHR	NR	VLR	NR	NR	NR	NR
Koraput	VHR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Malkangiri	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Mayurbhanj	NR	NR	NR	VLR	NR	NR	VLR	VHR	HR	NR	NR	NR	NR

Continue

Districts of Odisha	Livestock Diseases												
	Anthrax	**Babesiosis**	**BQ**	**BT**	**ET**	**Fasciolosis**	**FMD**	**HS**	**PPR**	**S&G Pox**	**SF**	**Theileriosis**	**Trypanosomiasis**
Nabarangapur	NR	NR	NR	VLR	VHR	NR	NR	NR	NR	VHR	NR	NR	NR
Nayagarh	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Nuapada	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Puri	NR	NR	NR	VLR	NR	NR	HR	NR	NR	NR	NR	NR	NR
Rayagada	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Sambalpur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Subarnapur	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Sundargarh	NR	NR	NR	VLR	NR	NR	MR	NR	VLR	HR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

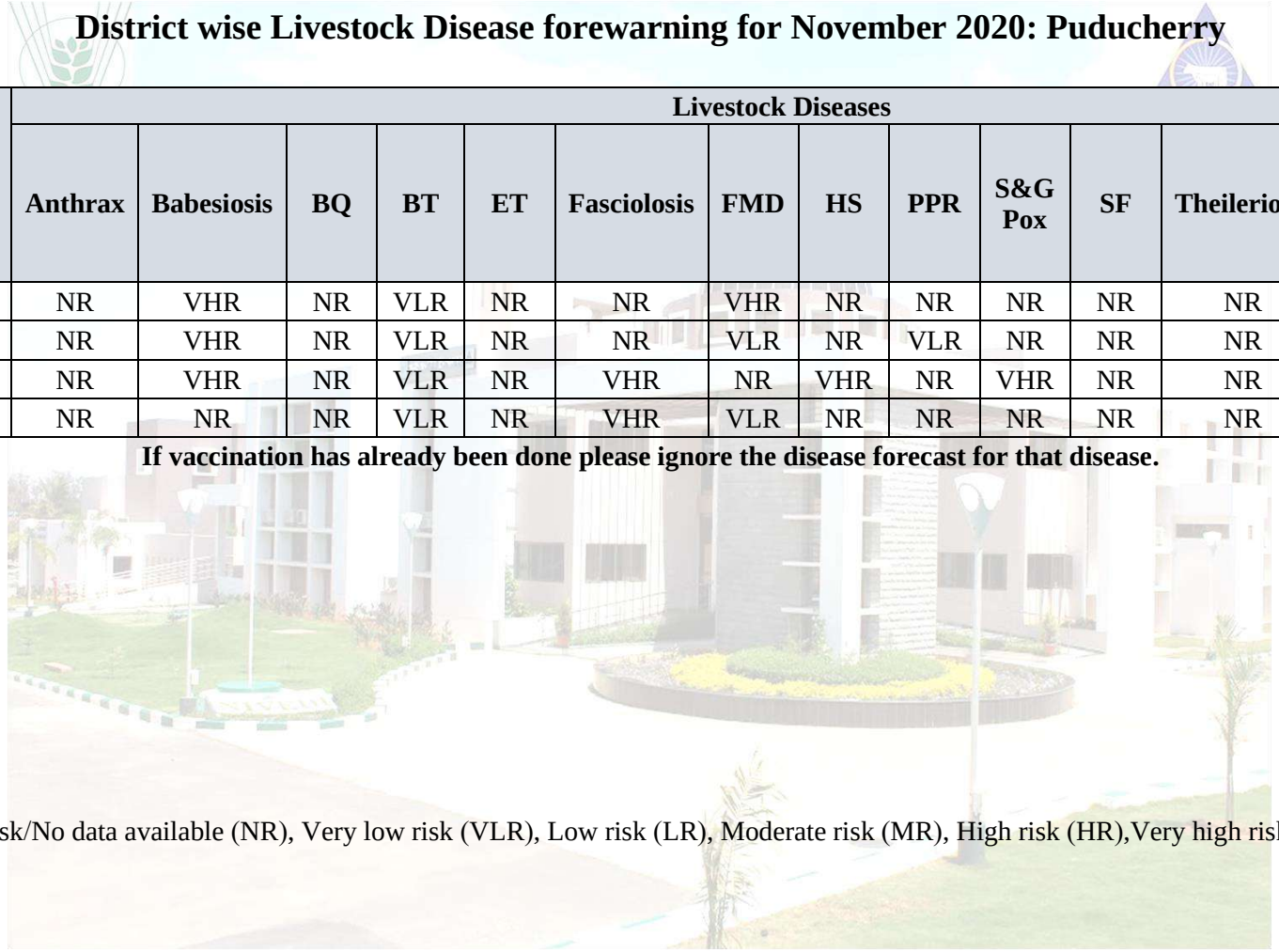


*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Puducherry

Districts of Puducherry	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Karaikal	NR	VHR	NR	VLR	NR	NR	VHR	NR	NR	NR	NR	NR	NR
Mahe	NR	VHR	NR	VLR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Puducherry	NR	VHR	NR	VLR	NR	VHR	NR	VHR	NR	VHR	NR	NR	NR
Yanam	NR	NR	NR	VLR	NR	VHR	VLR	NR	NR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.



*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Punjab

Districts of Punjab	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Amritsar	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Barnala	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Bathinda	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Faridkot	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Fatehgarh Sahib	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Firozpur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	VHR	NR	NR
Gurdaspur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Hoshiarpur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Jalandhar	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Kapurthala	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Ludhiana	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	VHR	VHR	NR
Mansa	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Moga	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	VHR
Muktsar	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Patiala	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Rupnagar	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Sahibzada Ajit Singh Nagar	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sangrur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Shahid Bhagat Singh Nagar	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Tarn Taran	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Rajasthan

Districts of Rajasthan	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Ajmer	NR	NR	NR	VLR	NR	NR	HR	NR	NR	NR	NR	NR	NR
Alwar	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Banswara	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Baran	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Barmer	NR	NR	NR	VLR	NR	NR	NR	VHR	VLR	NR	NR	NR	NR
Bharatpur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	VHR
Bhilwara	NR	NR	NR	NR	NR	NR	VLR	VHR	NR	NR	NR	NR	NR
Bikaner	NR	NR	NR	VLR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Bundi	NR	NR	NR	NR	NR	NR	HR	NR	VLR	NR	NR	NR	NR
Chittaurgarh	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Churu	NR	NR	NR	VLR	NR	NR	VLR	NR	VHR	NR	NR	NR	NR
Dausa	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Dhaulpur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Dungarpur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Ganganagar	NR	NR	NR	VLR	NR	NR	NR	NR	VLR	NR	NR	NR	NR
Hanumangarh	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	VHR	NR
Jaipur	NR	NR	NR	VLR	NR	NR	VLR	VHR	NR	NR	NR	NR	NR
Jaisalmer	NR	NR	NR	VLR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Jalor	NR	NR	NR	NR	NR	NR	VLR	HR	VLR	NR	NR	NR	NR
Jhalawar	NR	NR	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR
Jhunjhunun	NR	NR	NR	NR	NR	NR	HR	NR	NR	NR	NR	NR	NR
Jodhpur	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Karauli	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR

Continue

Districts of Rajasthan	Livestock Diseases												
	Anthrax	**Babesiosis**	**BQ**	**BT**	**ET**	**Fasciolosis**	**FMD**	**HS**	**PPR**	**S&G Pox**	**SF**	**Theileriosis**	**Trypanosomiasis**
Kota	NR	NR	NR	NR	NR	NR	MR	NR	VLR	NR	NR	NR	NR
Nagaur	NR	NR	NR	VLR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Pali	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Pratapgarh	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Rajsamand	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Sawai Madhopur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Sikar	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Sirohi	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Tonk	NR	NR	NR	NR	VHR	NR	VLR	NR	MR	NR	NR	NR	NR
Udaipur	NR	NR	NR	NR	NR	NR	VHR	NR	VLR	NR	NR	VHR	VHR

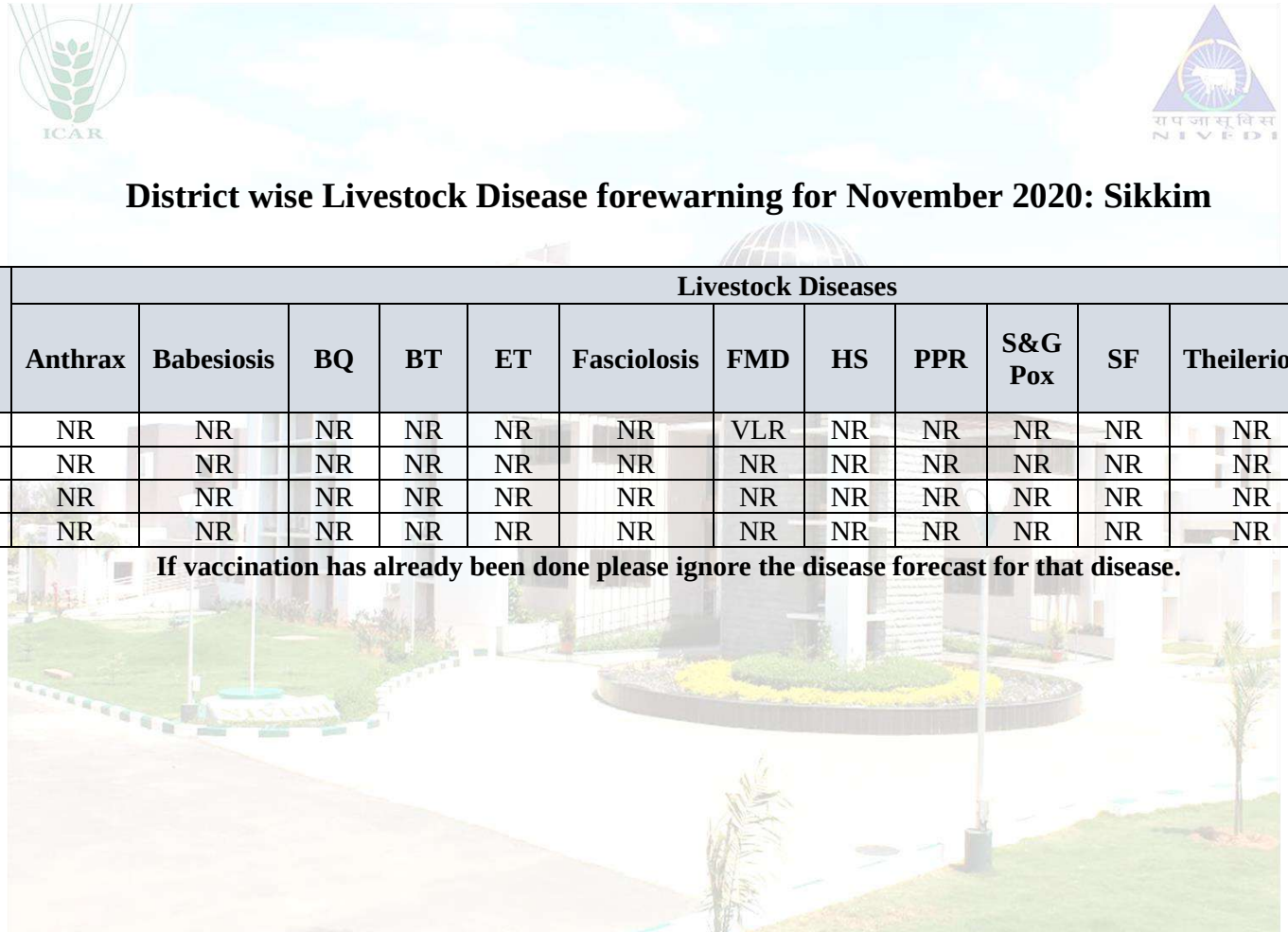
If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Sikkim

Districts of Sikkim	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
East District	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
North District	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
South District	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
West District	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.



*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

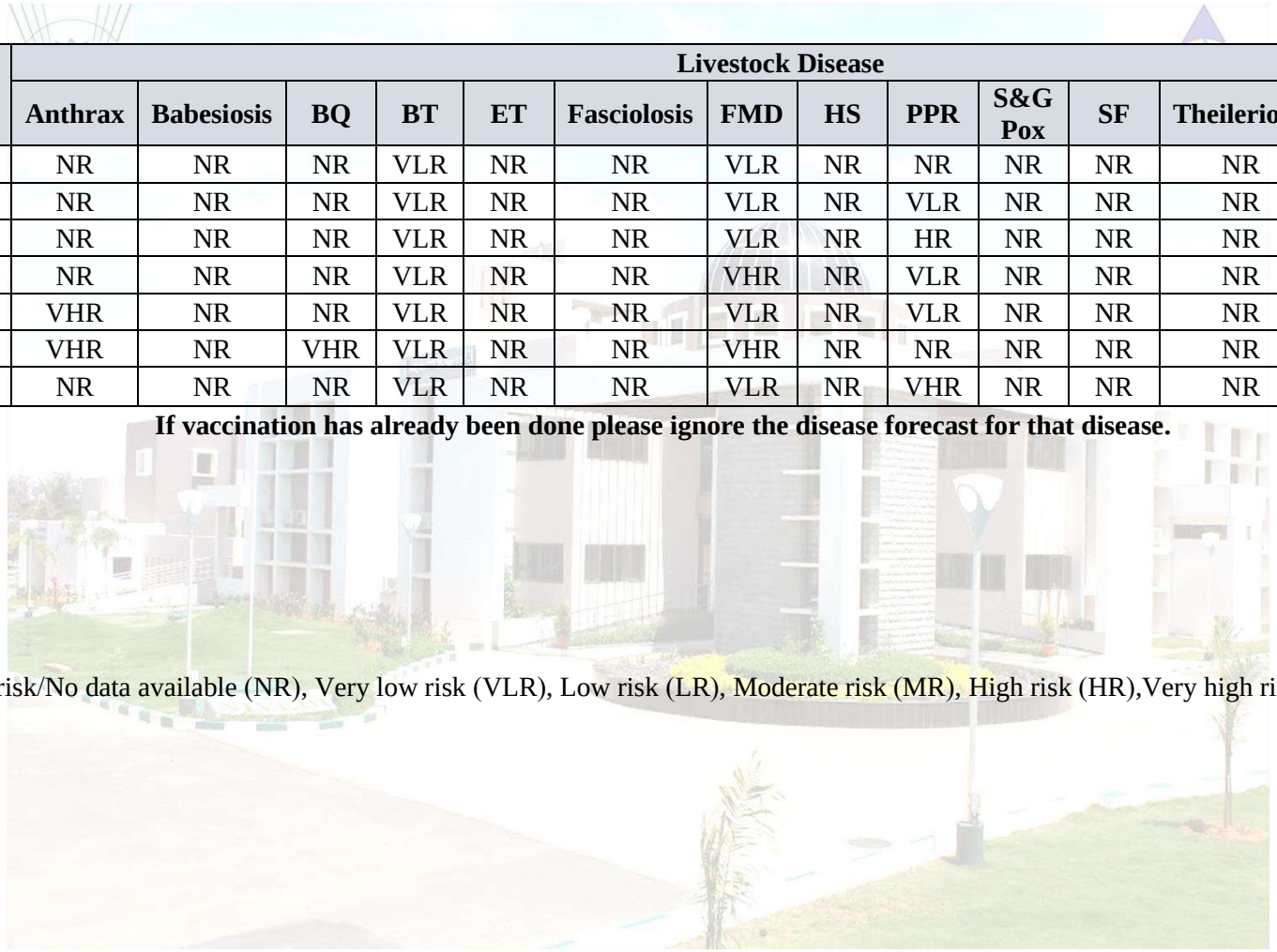
District wise Livestock Disease forewarning for November 2020: Tamil Nadu

Districts of Tamil Nadu	Livestock Disease												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Ariyalur	NR	NR	NR	VLR	NR	NR	VHR	NR	NR	NR	NR	NR	NR
Chennai	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Coimbatore	NR	NR	NR	VLR	NR	NR	VHR	NR	VLR	NR	NR	NR	NR
Cuddalore	NR	NR	NR	VLR	NR	NR	VHR	NR	NR	NR	NR	NR	NR
Dharmapuri	VHR	NR	NR	VLR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Dindigul	NR	NR	NR	VLR	NR	NR	VHR	NR	NR	NR	NR	NR	NR
Erode	NR	NR	NR	VLR	NR	NR	VHR	NR	NR	NR	NR	NR	NR
Kancheepuram	VHR	NR	NR	VLR	NR	NR	VHR	NR	NR	NR	NR	NR	NR
Kanniyakumari	NR	NR	NR	VLR	NR	NR	VLR	NR	MR	NR	NR	NR	NR
Karur	NR	NR	NR	HR	NR	NR	VHR	NR	NR	NR	NR	NR	NR
Krishnagiri	NR	NR	NR	VLR	NR	NR	VHR	NR	VLR	NR	NR	NR	NR
Madurai	NR	NR	NR	NR	NR	NR	VHR	NR	VLR	NR	NR	NR	NR
Nagapattinam	NR	NR	NR	NR	NR	NR	VHR	NR	NR	NR	NR	NR	NR
Namakkal	NR	NR	NR	NR	NR	NR	VHR	NR	MR	NR	NR	NR	NR
Perambalur	NR	NR	NR	NR	NR	NR	VHR	NR	NR	NR	NR	NR	NR
Pudukkottai	VHR	NR	NR	VLR	NR	NR	VHR	NR	NR	NR	NR	NR	NR
Ramanathapuram	VHR	NR	NR	VLR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Salem	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Sivaganga	NR	NR	NR	VLR	NR	NR	VHR	NR	NR	VHR	NR	NR	NR
Thanjavur	NR	NR	NR	VLR	NR	NR	VHR	NR	NR	NR	NR	NR	NR
The Nilgiris	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Theni	VHR	NR	NR	VLR	NR	NR	VHR	NR	VLR	NR	NR	NR	NR
Thiruvallur	NR	NR	NR	NR	NR	NR	VHR	NR	NR	NR	NR	NR	NR
Thiruvarur	NR	NR	NR	VLR	NR	NR	HR	NR	NR	NR	NR	NR	NR
Thoothukkudi	VHR	NR	NR	HR	NR	NR	MR	NR	VLR	NR	NR	NR	NR

Continue

Districts of Tamil Nadu	Livestock Disease												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Tiruchirappalli	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Tirunelveli	NR	NR	NR	VLR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Tiruppur	NR	NR	NR	VLR	NR	NR	VLR	NR	HR	NR	NR	NR	NR
Tiruvannamalai	NR	NR	NR	VLR	NR	NR	VHR	NR	VLR	NR	NR	NR	NR
Vellore	VHR	NR	NR	VLR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Viluppuram	VHR	NR	VHR	VLR	NR	NR	VHR	NR	NR	NR	NR	NR	NR
Virudhunagar	NR	NR	NR	VLR	NR	NR	VLR	NR	VHR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.



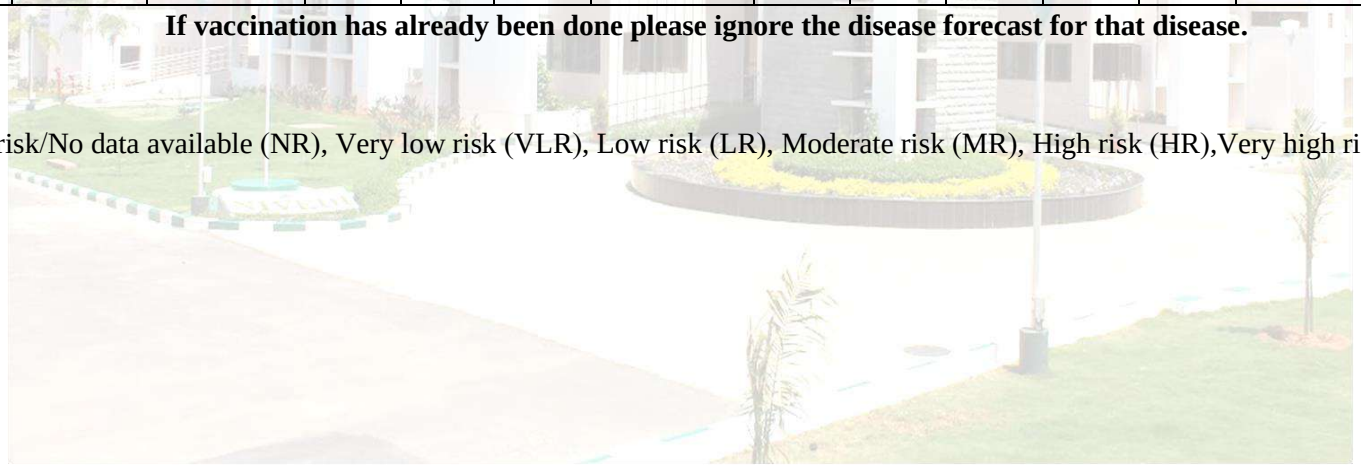
*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Telangana

Districts of Telangana	Livestock Diseases												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Adilabad	NR	NR	NR	LR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Hyderabad	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Karimnagar	NR	NR	NR	LR	VHR	NR	VLR	NR	NR	NR	NR	NR	NR
Khammam	NR	NR	VHR	VLR	VHR	NR	VLR	NR	NR	NR	NR	NR	NR
Mahbubnagar	NR	NR	NR	MR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Medak	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Nalgonda	NR	NR	NR	LR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Nizamabad	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Rangareddy	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Warangal	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

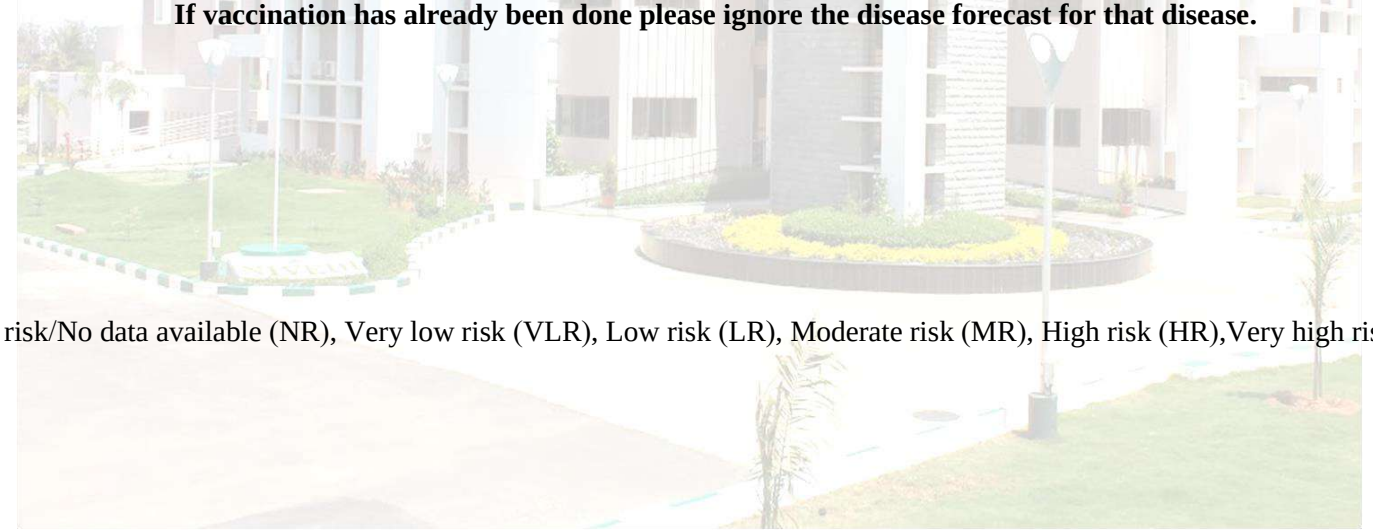
*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)



District wise Livestock Disease forewarning for November 2020: Tripura

Districts of Tripura	Livestock Disease												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Dhalai	NR	NR	NR	NR	NR	NR	VLR	NR	NR	VHR	NR	NR	NR
North Tripura	NR	NR	NR	NR	NR	NR	HR	NR	NR	VHR	NR	NR	NR
South Tripura	NR	VHR	VHR	NR	NR	VHR	VHR	VHR	HR	VHR	VHR	NR	NR
West Tripura	VHR	VHR	VHR	NR	NR	VHR	VHR	VHR	NR	VHR	VHR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.



*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Uttar Pradesh

Districts of Uttar Pradesh	Livestock Disease												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Agra	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Aligarh	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Allahabad	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Ambedkar Nagar	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Amethi	NR	NR	NR	VLR	NR	VHR	VLR	NR	NR	NR	NR	NR	NR
Auraiya	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Azamgarh	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Baghpat	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	MR
Bahraich	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Ballia	NR	VHR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	VHR	VHR
Balrampur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Banda	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Bara Banki	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Bareilly	NR	NR	NR	NR	NR	NR	NR	NR	MR	NR	NR	NR	NR
Basti	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Bijnor	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Budaun	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Bulandshahr	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chandauli	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	HR
Chitrakoot	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	VHR
Deoria	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Etah	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Etawah	NR	VHR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Faizabad	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Farrukhabad	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

Continue

Districts of Uttar Pradesh	Livestock Disease												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Fatehpur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Firozabad	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Gautam Buddha Nagar	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Ghaziabad	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Ghazipur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Gonda	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Gorakhpur	NR	NR	NR	NR	NR	NR	NR	NR	HR	NR	NR	NR	NR
Hamirpur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Hapur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Hardoi	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Jalaun	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Jaunpur	NR	NR	NR	NR	NR	VHR	NR	NR	NR	NR	NR	NR	NR
Jhansi	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Jyotiba Phule Nagar	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Kannauj	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Kanpur Dehat	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Kanpur Nagar	NR	NR	NR	NR	NR	NR	NR	NR	VHR	NR	NR	NR	NR
Kanshiram Nagar	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Kaushambi	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	VHR
Kheri	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Kushinagar	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lalitpur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lucknow	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
MahaDecembera Nagar	NR	NR	NR	NR	NR	VHR	VLR	NR	NR	NR	NR	NR	VHR
Mahoba	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR

Continue

Districts of Uttar Pradesh	Livestock Disease												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Mahrajganj	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mainpuri	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mathura	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mau	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Meerut	NR	NR	NR	NR	NR	VHR	NR	NR	NR	NR	NR	NR	NR
Mirzapur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	VHR
Moradabad	NR	NR	NR	NR	NR	NR	NR	NR	HR	NR	NR	NR	NR
Muzaffarnagar	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Pilibhit	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Pratapgarh	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Rae Bareli	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Rampur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Saharanpur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sambhal	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Sant Kabir Nagar	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sant Ravidas Nagar	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Shahjahanpur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Shamli	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Shrawasti	NR	NR	NR	NR	NR	NR	NR	VHR	NR	NR	NR	NR	NR
Siddharthnagar	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sitapur	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Sonbhadra	NR	NR	NR	NR	NR	VHR	NR	VHR	NR	NR	NR	NR	VHR
Sultanpur	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Unnao	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Varanasi	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

If vaccination is already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: Uttarakhand

Districts of Uttarakhand	Livestock Disease												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Almora	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Bageshwar	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chamoli	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Champawat	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Dehradun	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Garhwal	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Hardwar	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Nainital	NR	NR	NR	VLR	NR	NR	VLR	NR	VLR	NR	HR	NR	NR
Pithoragarh	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Rudraprayag	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Tehri Garhwal	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	HR	NR	NR
Udham Singh Nagar	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Uttarkashi	NR	NR	NR	NR	NR	NR	VLR	NR	NR	NR	NR	NR	NR

If vaccination has already been done, please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

District wise Livestock Disease forewarning for November 2020: West Bengal

Districts of West Bengal	Livestock Disease												
	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis
Bankura	NR	VHR	NR	VLR	NR	NR	VHR	NR	VHR	NR	NR	VHR	NR
Barddhaman	NR	VHR	NR	NR	NR	NR	VHR	VHR	VLR	NR	NR	VHR	VHR
Birbhum	NR	VHR	VHR	NR	NR	NR	VHR	NR	VHR	NR	NR	NR	VHR
Dakshin Dinajpur	NR	NR	NR	NR	NR	NR	VLR	NR	HR	NR	NR	NR	VHR
Darjiling	NR	NR	NR	NR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR
Haora	NR	VHR	NR	NR	NR	NR	VHR	NR	VHR	NR	NR	VHR	NR
Hugli	NR	VHR	VHR	VLR	NR	NR	VHR	NR	VHR	VHR	NR	VHR	HR
Jalpaiguri	NR	NR	NR	VLR	NR	NR	VHR	NR	VHR	NR	NR	NR	NR
Koch Bihar	NR	VHR	VHR	NR	NR	NR	VLR	MR	VLR	NR	NR	NR	NR
Kolkata	NR	NR	NR	VLR	NR	NR	VLR	NR	NR	NR	NR	NR	NR
Maldah	NR	VHR	NR	VLR	NR	NR	VLR	NR	VHR	NR	NR	NR	NR
Murshidabad	VHR	NR	NR	VLR	NR	NR	VHR	NR	HR	NR	NR	NR	NR
Nadia	NR	NR	NR	VLR	NR	NR	VLR	NR	VHR	NR	NR	VHR	NR
North Twenty-Four Parganas	NR	VHR	NR	VLR	NR	NR	LR	NR	VLR	VHR	NR	VHR	VHR
Paschim Medinipur	NR	NR	VHR	NR	NR	NR	VHR	NR	NR	NR	NR	VHR	NR
Purba Medinipur	NR	NR	NR	VLR	NR	NR	VHR	VHR	VLR	NR	NR	NR	NR
Puruliya	NR	VHR	VHR	NR	NR	NR	HR	HR	VHR	NR	NR	NR	NR
South Twenty Four Parganas	NR	NR	NR	VLR	NR	NR	VHR	NR	VLR	NR	NR	VHR	NR
Uttar Dinajpur	NR	NR	NR	VLR	NR	NR	VLR	NR	VLR	NR	NR	NR	NR

If vaccination has already been done please ignore the disease forecast for that disease.

*No risk/No data available (NR), Very low risk (VLR), Low risk (LR), Moderate risk (MR), High risk (HR),Very high risk (VHR)

ii) State wise Livestock Disease forewarning for November 2020

Sl. No	State Name	Anthrax	Babesiosis	BQ	BT	ET	Fasciolosis	FMD	HS	PPR	S&G Pox	SF	Theileriosis	Trypanosomiasis	Total number of disease events likely to occur
1	Andaman and Nicobar	0	0	0	0	0	2	0	0	0	0	0	0	0	**02**
2	Andhra Pradesh	1	0	0	1	2	0	3	1	0	1	0	0	0	**09**
3	Arunachal Pradesh	0	1	0	0	0	0	0	0	0	0	0	0	0	**01**
4	Assam	0	0	9	0	1	13	0	0	2	3	9	3	0	**40**
5	Bihar	0	1	0	0	0	0	4	0	0	0	0	0	2	**07**
6	Chandigarh	0	0	0	0	0	0	0	0	0	0	0	0	0	**00**
7	Chhattisgarh	1	0	0	0	0	0	0	0	0	0	0	0	0	**01**
8	Dadra and Nagar Haveli	0	0	0	0	0	0	0	0	0	0	0	0	0	**00**
9	Daman and Diu	0	0	0	0	0	0	0	0	0	0	0	0	0	**00**
10	Goa	0	1	0	0	0	0	2	0	0	0	0	0	0	**03**
11	Gujarat	0	0	0	0	1	0	0	3	4	0	0	1	1	**10**
12	Haryana	0	1	0	0	0	0	0	0	0	1	2	0	0	**04**
13	Himachal Pradesh	0	0	0	0	0	0	0	2	0	1	0	0	0	**03**
14	Jammu and Kashmir	0	0	0	0	1	0	0	0	0	8	0	0	0	**09**
15	Jharkhand	2	22	4	0	3	21	12	5	14	1	6	21	22	**133**
16	Karnataka	8	1	8	7	12	0	16	13	3	4	1	3	0	**76**
17	Kerala	3	1	0	0	0	0	14	4	2	1	4	7	0	**36**
18	Lakshadweep	0	0	0	0	0	0	0	0	0	0	0	0	0	**00**
19	Madhya Pradesh	0	0	1	0	0	0	6	6	2	0	1	0	2	**18**
20	Maharashtra	0	0	1	0	0	0	0	6	4	2	0	0	0	**13**
21	Manipur	0	0	1	0	0	4	0	3	0	1	6	0	0	**15**
22	Meghalaya	0	0	4	0	0	1	5	3	0	0	5	0	0	**18**
23	Mizoram	0	0	0	0	0	0	1	0	0	1	0	0	0	**02**
24	Nagaland	0	0	0	0	0	0	2	0	0	0	4	0	0	**06**
25	NCT of Delhi	0	0	0	0	0	0	0	0	0	0	0	0	0	**00**
26	Odisha	1	0	3	0	2	2	4	3	5	2	0	0	0	**22**
27	Puducherry	0	3	0	0	0	2	1	1	0	1	0	0	0	**08**
28	Punjab	0	0	0	0	0	0	0	0	0	0	2	1	1	**04**
29	Rajasthan	0	0	0	0	1	0	4	4	1	0	0	2	2	**14**
30	Sikkim	0	0	0	0	0	0	0	0	0	0	0	0	0	**00**
31	Tamil Nadu	8	0	1	2	0	0	20	0	2	1	0	0	0	**34**
32	Telangana	0	0	1	0	2	0	0	0	0	0	0	0	0	**03**
33	Tripura	1	2	2	0	0	2	3	2	1	4	2	0	0	**19**
34	Uttar Pradesh	0	2	0	0	0	5	0	2	3	0	0	1	7	**20**
35	Uttarakhand	0	0	0	0	0	0	0	0	0	0	2	0	0	**02**
36	West Bengal	1	9	5	0	0	0	11	3	10	2	0	8	5	**54**
Total number of districts likely to report		**26**	**44**	**40**	**10**	**25**	**52**	**108**	**61**	**53**	**34**	**44**	**47**	**42**	**586**

*Number of predicted disease incidence was summarised considering only High risk and Very high risk (+HR)

Andaman and Nicobar

A total of 3 districts in Andaman and Nicobar are likely to report one major livestock disease i.e., Fasciolosis. Fasciolosis is most likely to occur in two districts (Nicobars and South Andaman) respectively.

Andhra Pradesh

A total of 13 districts in Andhra Pradesh are likely to report six major livestock diseases. i.e., Anthrax, Bluetongue, Enterotoxaemia, Foot and Mouth Disease, Haemorrhagic Septicaemia and Sheep & Goat pox. Of theses, Foot and Mouth Disease is likely to report in 3 districts (Anantapur, Chittoor and Kurnool). Enterotoxaemia having a threat for two districts (Krishna and Prakasam). Anthrax and Sheep & Goat pox are likely to occur in Kurnool and Prakasam districts. Both Bluetongue and Haemorrhagic Septicaemia, are likely to occur in one district i.e., Anantapur.

Arunachal Pradesh

A total of 16 districts from Arunachal Pradesh are likely to report one major livestock disease i.e., Babesiosis. Babesiosis is likely to occur in West Kameng district.

Assam

A total of 27 districts from Assam are likely to report 7 major livestock diseases i.e., Black Quarter, Enterotoxaemia, Fasciolosis, Peste des Petits Ruminants, Sheep & Goat pox, Swine Fever and Theileriosis. Of these, Fasciolosis is most likely to occur in 13 districts. Black Quarter and Swine Fever are likely to occur in 9 districts. Sheep & Goat pox and Theileriosis are reported to occur in 3 districts. Two districts (Dibrugarh and Kamrup) are having a threat for Peste des Petits Ruminants. Enterotoxaemia is likely to occur in one district i.e., Tinsukia.

Bihar

Three livestock diseases (Babesiosis, Foot and Mouth Disease and Trypanosomiasis) are predicted to be reported from Bihar. Four districts are likely to have Foot and Mouth Disease. Two districts (Arwal and Bhojpur) are having a threat for Trypanosomiasis. Babesiosis is likely to occur in Bhojpur district.

Chandigrah

One livestock disease (Anthrax) is predicted to be reported from Chandigrah. Anthrax is likely to occur in Koriya district.

Goa

Two livestock diseases (Babesiosis and Foot and Mouth Disease) are predicted to be reported from Goa. Foot and Mouth Disease is reported to occur in two districts (North Goa and South Goa). Babesiosis is reported to occur in one district i.e, North Goa.

Gujarat

A total of 26 districts from Gujarat are likely to report 5 major livestock diseases i.e., Enterotoxaemia, Haemorrhagic Septicaemia, Peste des Petits Ruminants, Theileriosis and Trypanosomiasis. Peste des Petits Ruminants is most likely to occur in four districts. Three districts (Bhavnagar, Mahesana and Surat) are having a threat for Haemorrhagic Septicaemia. Both Theileriosis and Trypanosomiasis are predicted to occur in Gandhinagar district. Enterotoxaemia is likely to occur in one district i.e., Junagadh

Haryana

A total of 21 districts from Haryana are likely to report 3 major livestock diseases i.e., Babesiosis, Sheep & Goat pox and Swine Fever. Of these, Swine Fever is most likely to occur in two districts (Hisar and Rohtak). Both Babesiosis and Sheep & Goat pox, are predicted to occur in Hisar district.

Himachal Pradesh

Two livestock diseases (Haemorrhagic Septicaemia and Sheep & Goat pox) are predicted to be reported from Himachal Pradesh. Haemorrhagic Septicaemia is most likely to occur in two districts (Mandi and Shimla). Sheep & Goat pox is likely to occur in Kinnaur district.

Jammu and Kashmir

A total of 22 districts in Jammu and Kashmir are likely to report two major livestock diseases i.e., Enterotoxaemia and Sheep & Goat pox. Of these, Sheep & Goat pox is predicted to occur in 8 districts. Enterotoxaemia is likely to occur in Kulgam district.

Jharkhand

A total of 24 districts in Jharkhand are likely to report 12 major livestock diseases i.e., Anthrax, Babesiosis, Black Quarter, Enterotoxaemia, Fasciolosis, Foot and Mouth Disease, Haemorrhagic Septicaemia, Peste des Petits Ruminants, Sheep & Goat pox, Swine Fever, Theileriosis and Trypanosomiasis. Of these, Babesiosis and Trypanosomiasis are most likely to occur in 22 districts. Theileriosis and Fasciolosis are predicted to occur in 21 districts. 14 districts are predicted to be prone for Peste des Petits Ruminants. Foot and Mouth Disease is predicted to occur in 12 districts. Six districts are having a threat for Swine Fever. Haemorrhagic Septicaemia is reported to occur in five districts. Four districts are having a threat for Black Quarter. Enterotoxaemia is reported to occur in three districts (Lohardaga, Ranchi and Sahibganj). Anthrax is predicted to occur in two districts (Koderma and Ranchi). Sheep & Goat pox is likely to occur in Khunti district.

Karnataka

A total of 30 districts in Karnataka are likely to report 12 major livestock diseases i.e., Anthrax, Babesiosis, Black Quarter, Bluetongue, Enterotoxaemia, Foot and Mouth Disease, Haemorrhagic Septicaemia, Peste des Petits Ruminants, Sheep & Goat pox, Swine Fever, Theileriosis and Trypanosomiasis. Of these, Foot and Mouth Disease is most likely to occur in 16 districts. 13 districts are prone to have Haemorrhagic Septicaemia. Enterotoxaemia is reported to occur in 12 districts. Both Anthrax and Bluetongue are predicted to occur in Eight districts. Black Quarter is predicted to occur in 7 districts. Four districts are prone for Sheep & Goat pox disease. Both Peste des Petits Ruminants and Theileriosis, are reported to occur in three districts. Both Babesiosis and Swine Fever, are likely to occur in Bangalore Urban district.

Kerala

Eight livestock diseases (Anthrax, Babesiosis, Foot and Mouth Disease, Haemorrhagic Septicaemia, Peste des Petits Ruminants, Sheep & Goat pox, Swine Fever and Theileriosis) are predicted to be reported from Kerala. Fourteen districts are likely to have Foot and Mouth Disease. Seveen districts are prone to have Theileriosis. Both Haemorrhagic Septicaemia and Swine Fever, are reported to occur in 4 districts. Anthrax is reported to occur in Three districts (Ernakulam, Kannur and Kottayam). Two districts (Alappuzha and Thiruvananthapuram) are having a threat for Peste des Petits Ruminants. Babesiosis and Sheep & Goat pox are likely to occur in Ernakulam and Palakkad districts respectively.

Madhya Pradesh

A total of 50 districts in Madhya Pradesh are likely to report 6 major livestock diseases i.e., Black Quarter, Foot and Mouth Disease, Haemorrhagic Septicaemia, Peste des Petits Ruminants, Swine Fever and Trypanosomiasis. Of these, both Foot and Mouth Disease and Haemorrhagic Septicaemia, are most likely to occur in 6 districts. Peste des Petits Ruminants is reported to occurin 2 districts (Chhindwara and Indore). Trypanosomiasis is reported to occur in two districts (Jhabua and Shahdol). Black Quarter and Swine Fever are reported to occur from Betul and Datia districts respectively.

Maharashtra

A total of 35 districts in Maharashtra are likely to report 4 major livestock disease i.e., Black Quarter, Foot and Mouth Disease, Peste des Petits Ruminants and Sheep & Goat pox. Of these, Foot and Mouth Disease is most likely to occur in 6 districts. Peste des Petits Ruminants is likely to occur in 4 districts. Sheep & Goat pox is reported to occur in two districts (Kolhapur and Sangli). Black Quarter is likely occurred in one district i.e., Dhule.

Manipur

A total of 9 districts in Manipur are likely to report 4 major livestock disease i.e., Black Quarter, Fasciolosis, Haemorrhagic Septicaemia, Sheep & Goat pox and Swine fever. Swine fever is predicted to occur in 6 districts. Fasciolosis is reported to occur in 4 districts. Haemorrhagic Septicaemia is having a threat for three districts (mphal East, Senapati and Ukhrul). Black Quarter and Sheep & Goat pox are likely to be reported from Imphal East and Chandel districts respectively.

Meghalaya

A total of 11 districts in Meghalaya are likely to have 5 major livestock diseases i.e., Black Quarter, Fasciolosis, Foot and Mouth Disease, Haemorrhagic Septicaemia and Swine fever. Foot and Mouth Disease and Swine Fever are most likely to occur in 5 districts. Black Quarter is predicted to occur in 4 districts. Three districts (East Jaintia Hills, Southwest Khasi Hills and West Garo Hills) having a threat for Black Quarter. Fasciolosis is likely to report in one district i.e., Southwest Garo Hills.

Mizoram

Two livestock diseases (Foot and Mouth Disease and Sheep & Goat pox) are predicted to be reported from Mizroam. Foot and Mouth Disease and Sheep & Goat pox are likely to occur in Lunglei and Mamit districts respectively.

Nagaland

Two livestock diseases (Foot and Mouth Disease and Swine Fever) are predicted to be reported from Nagaland. Swine Fever is most likey to occur in four districts (Dimapur, Kohima, Peren and Zunheboto), while, Foot and Mouth Diseaseis is likely to occur in two districts (Kohima and Peren).

Odisha

A total of 30 districts in Odisha are likely to report 8 major livestock diseases, i.e., Anthrax, Black Quarter, Enterotoxaemia, Fasciolosis, Foot and Mouth Disease, Haemorrhagic Septicaemia, Peste des Petits Ruminants and Sheep & Goat pox. of these, Peste des Petits Ruminants is most likely to occur in five districts. Four districts having a threat for Foot and Mouth Disease. Black Quarter and Haemorrhagic Septicaemia are predicted to occur in 3 districts. Enterotoxaemia and Fasciolosis are reported to occur in two districts. Sheep & Goat pox is predicted to occur in two districts (Nabarangapur and Sundargarh). Anthrax is likely occurred in Koraput district .

Puducherry

A total of 4 districts in Puducherry are likely to report 5 major livestock diseases i.e., Babesiosis, Fasciolosis, Foot and Mouth Disease, Haemorrhagic Septicaemia and Sheep & Goat pox. Three districts are having a threat for Babesiosis. Fasciolosis is predicted to occurred in two districts (Puducherry and Yanam). Both Haemorrhagic Septicaemia and Sheep & Goat pox, are likely to be reported from Puducherry district. Foot and Mouth Disease is likely to occur in Karaikal district .

Punjab

A total of 20 districts in Punjab are likely to report three major livestock disease i.e., Swine Fever, Theileriosis and Trypanosomiasis. Of theses, Swine fever is most likely to occur in two districts (Firozpur and Ludhiana). Theileriosis and Trypanosomiasis are predicted to occur in Ludhiana and Moga districts respectively.

Rajasthan

A total of 33 districts in Rajasthan are likely to report 6 major livestock diseases, i.e., Enterotoxaemia, Foot and Mouth Disease, Haemorrhagic Septicaemia, Peste des Petits Ruminants, Theileriosis and Trypanosomiasis. Of these, Foot and Mouth Disease and Haemorrhagic Septicaemia are most likely to occur in four districts. Theileriosis and Trypanosomiasis are predicted to occur in two districts. Enterotoxaemia and Peste des Petits Ruminants are likely to be reported from Tonk and Churu districts respectively.

Tamil Nadu

A total of 32 districts in Tamil Nadu are likely to report 6 major livestock diseases i.e., Anthrax, Black Quarter, Bluetongue, Foot and Mouth Disease, Peste des Petits Ruminants and Sheep & Goat pox. Of these, Foot and Mouth Disease is most likely to occur in 20 districts. Anthrax is predicted to occur in 8 districts. Bluetonge is reported to occur in two districts (Karur and Thoothukkudi). Peste des Petits Ruminants is predicted to occur in two districts (Tiruppur and Virudhunagar). Black Quarter and Sheep & Goat pox are likely to be reported from Viluppuram and Sivaganga districts respectively.

Telangana

A total of 10 districts in Telangana are likely to report 2 major livestock diseases i.e., Black Quarter and Enterotoxaemia. Enterotoxaemia is most likely to occur in two districts (Karimnagar and Khammam). Black Quarter is likely to report from Khammam district.

Tripura

A total of 4 districts in Tripura are likely to report 9 major livestock diseases i.e., Anthrax, Babesiosis, Black Quarter, Fasciolosis, Foot and Mouth Disease, Haemorrhagic Septicaemia, Peste des Petits Ruminants, Sheep & Goat pox and Swine Fever. Of these, Sheep & Goat pox is most likely to occur in four districts. Foot and Mouth Disease is likely to report from three districts. Babesiosis, Black Quarter and Fasciolosis, are reported to occur in two districts (South Tripura and West Tripura). Haemorrhagic Septicaemia and Swine Fever are reported to occur from same districts (South Tripura and West Tripura). Anthrax and Peste des Petits Ruminants are likely to report from West Tripura and South Tripura districts respectively.

Uttar Pradesh

A total of 75 districts in Uttar Pradesh are likely to report 6 major livestock diseases i.e., Babesiosis, Fasciolosis, Haemorrhagic Septicaemia, Peste des Petits Ruminants, Theileriosis and Trypanosomiasis. Of these, Trypanosomiasis is most likely to occur in 7 districts. 5 districts are prone to have Fasciolosis. Peste des Petits Ruminants is predicted to occur in three districts. Babesiosis and Haemorrhagic Septicaemia are reported to occur in two districts. Theileriosis is likely to report from Ballia district**.**

Uttarakhand

One livestock disease (Swine Fever) is predicted to be reported from Uttarrakhand. Swine Fever is likely to report from two districts (Nainital and Tehri Garhwal).

West Bengal

A total of 19 districts in West Bengal are likely to report 9 major livestock diseases i.e., Anthrax, Babesiosis, Black Quarter, Foot and Mouth Disease, Haemorrhagic Septicaemia, Peste des Petits Ruminants, Sheep & Goat pox, Theileriosis and Trypanosomiasis. Of these, Foot and Mouth Disease is most likely to occur in 11 districts. Ten districts are prone to Peste des Petits Ruminants. Nine districts are having a threat for Babesiosis. Theileriosis is predicted to occurred in 8 districts. Seven distrits are having a threat for Peste des Petits Ruminants. Black Quarter and Trypanosomiasis are predicted to occur in 5 districts. Haemorrhagic Septicaemia is predicted to occur in three districts (Barddhaman, Purba Medinipur and Puruliya). Sheep & Goat pox is likely to occur in two districts (Hugli and North Twenty-Four Parganas). Anthrax is likely to be reported from Murshidabad district.

iii) Diseases, Species affected, clinical signs and its preventive measures.

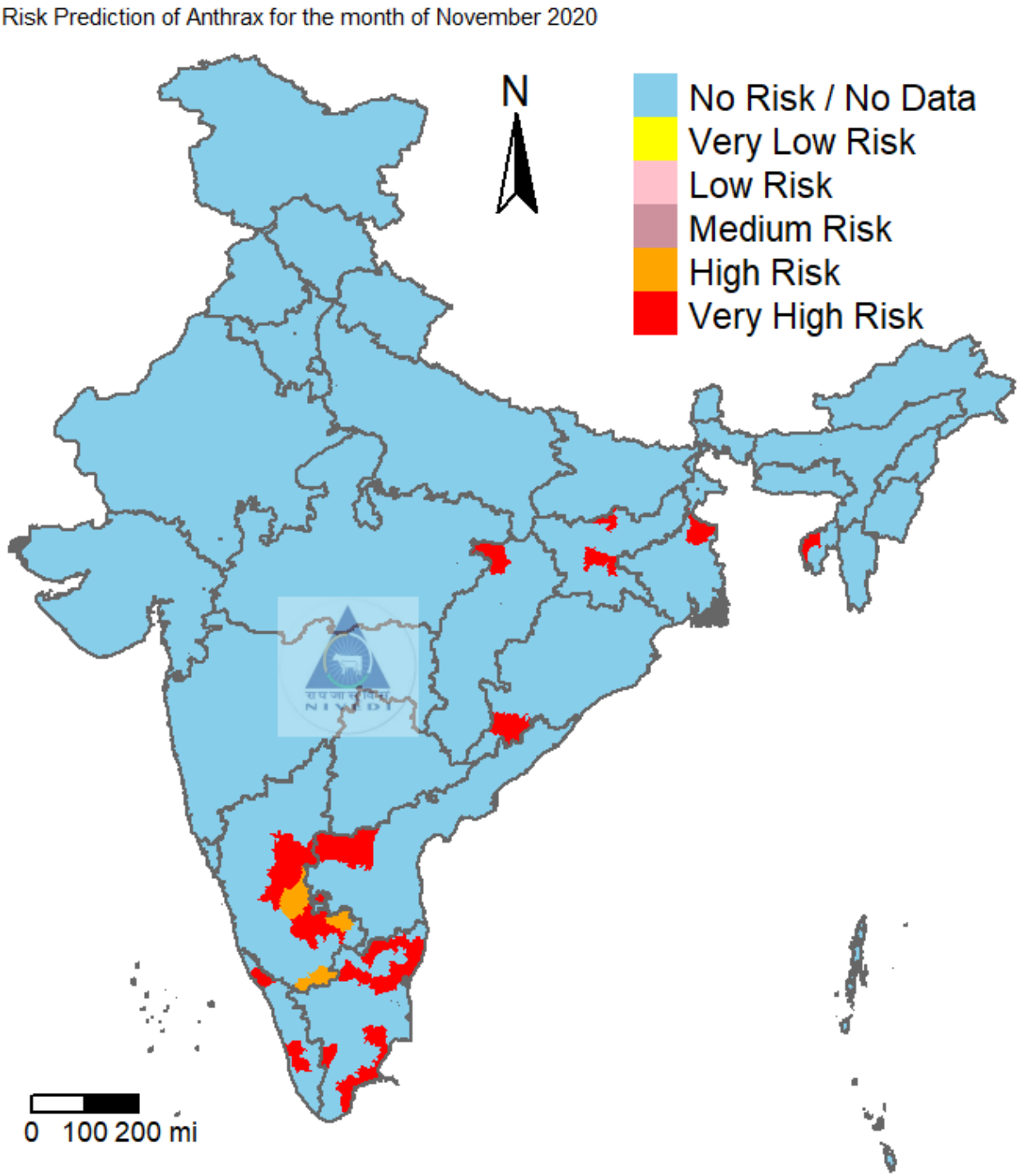
Sl No.	Disease	Species Affected	Clinical Signs	Preventive Measures
1	Anthrax (AX)	Most of the mammals and ruminants are highly susceptible. Pigs and Horses are moderately susceptible. Carnivores are relatively resistant.	Convulsion and sudden death with oozing of blood from natural orifices such as rectum and nose prior to death. Occasionally oedema develops in the throat and shoulder over a period of one week before death.	Ring vaccination and report of disease is advised. Vaccination to be done in consultation with the veterinarians and as decided by state animal husbandry authorities. Strict biosecurity measures may be followed. Carcass may be disposed by deep burying covered with lime powder. Contaminated area may be disinfected with 4% formalin or 10% caustic soda. Grazing area may be restricted.
2	Babesiosis (BA)	Cattle. Cross breeds are more susceptible.	High temperature, jaundice like symptoms, yellowish mucosal membrane of eye, rectum and coffee colour urine.	Periodical application of acaricides in and around the animal shed and on the animals. For therapeutic application, Diaminizine or Imidocarb can be useful.
3.	Black Quarter (BQ)	Common disease for cattle and sheep but occasionally goats and pigs also suffer from the disease.	High fever and lameness followed by swelling in the neck, shoulder, lumbar, gluteal and sacral regions. Skin over the affected area become dark and crepitate on palpation. Loss of feed intake, colic, lateral recumbency, dyspnoea and death.	Affected animals may be treated with suitable antibiotics. Vaccination to be done in consultation with the veterinarians and as decided by state animal husbandry authorities. Strict biosecurity measures may be followed. Grazing area may be restricted. Carcass may be disposed hygienically.
4.	Bluetongue (BT)	Sheep are more susceptible than goats.	Fever, swelling of face, neck, eyelids respiratory distress, nasal discharge, Salivation, necrotic ulcers on tongue, dental pad, gum, lips hyperaemia of muzzle and May bleed at muco-cutaneous junction.	Vector control using insecticides and good water management. Vaccination of susceptible animals preferably in the month of May. Do not shear sheep during winter

			Affected tongue may become swollen, cyanotic and purple blue in colour – 'bluetongue'.	months. Restriction in animal movement, segregation of affected animals and symptomatic treatment. Strict biosecurity measures.
5.	Enterotoxaemia (ET)	Common disease of sheep and goats especially among the young animals.	Dullness, opisthotonos, convulsions, coma and sudden death. Affected adult sheep, which survive for several days May show diarrhoea and staggering.	Affected animals May be treated with suitable antibiotics. Vaccination to be done in consultation with the veterinarians and as decided by State Animal Husbandry Authorities. Strict biosecurity measures may be followed. Carcass may be disposed hygienically. Grazing area to be restricted, stall fed, vitamins and probiotics May be provided.
6.	Fasciolosis (FA)	Cattle, buffalo, sheep and goats.	Progressive anaemia, pale mucous membrane, sub-mandibular oedema (Bottle jaw), loss of appetite, weakness in movement, isolated from flock while grazing, loss in production.	The animal should not be allowed to graze in water stagnant fields or submerged fodder should not be given directly to the animals. The submerged fodder can be processed through hay/silage preparation, where metacercaria will die through this process. The affected animals can be treated by Carbon tetrachloride/ Rafoxanide/Nitroxynil/ Niclofolan /Closantel/Oxyclozanide, under Veterinarian and under strict supervision.
7.	Foot and Mouth Disease(FMD)	Cattle, buffalo, sheep, goats and pigs are often affected domesticated species, but the disease is more severe in cattle and pigs.	Fever, loss of feed intake, drop in milk production, drooling of saliva like ropey string, vesicles develop on the tongue, lips, gums, and palate and eventually rupture. Concurrent to oral lesions,	Regular vaccination and seromonitoring. Disinfection with sodium carbonate (4%) or 10% washing soda and strict biosecurity measures to be followed and animal movement

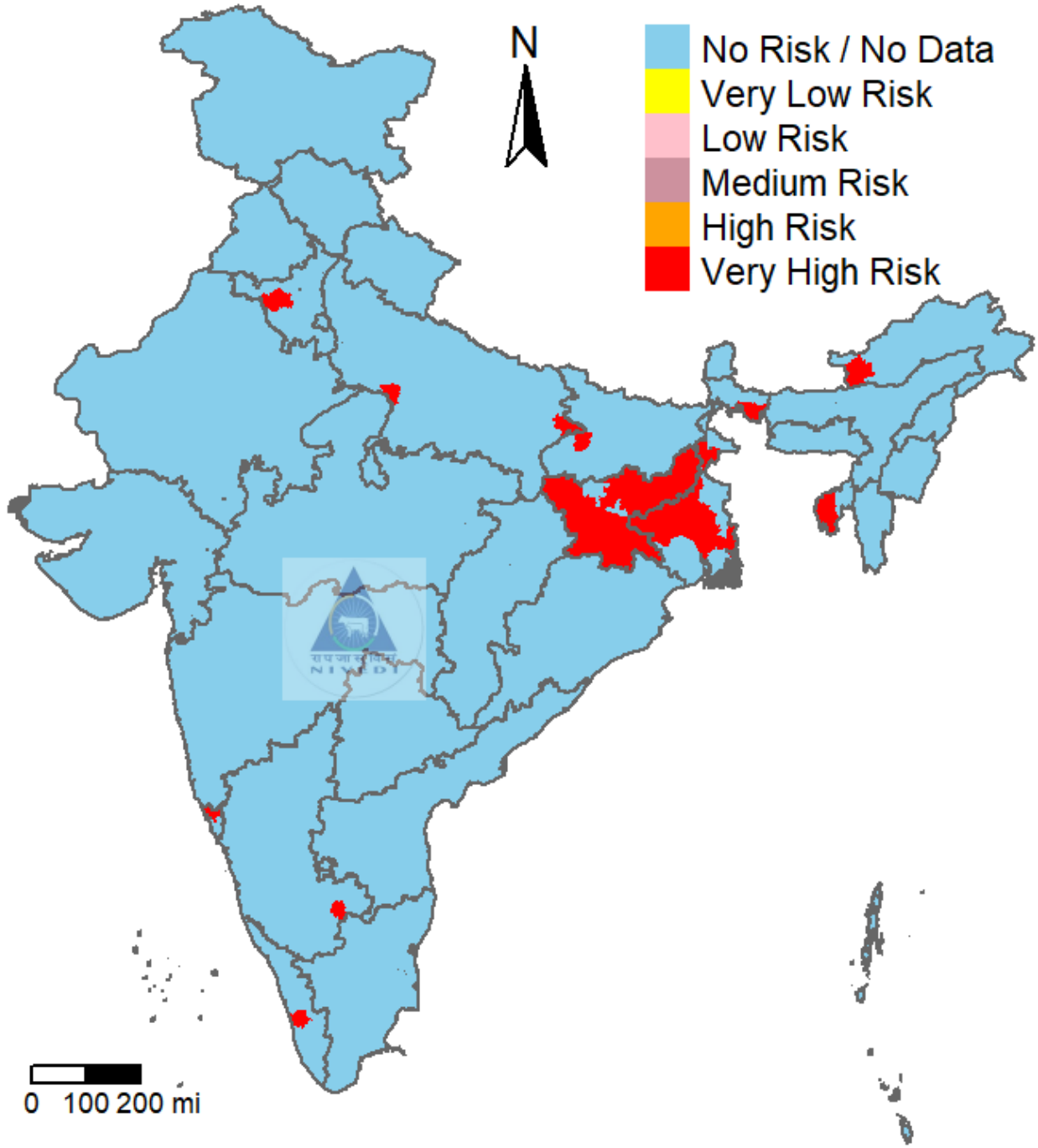
			vesicles also appear in inter digital skin and coronary band of the feet. The animal May open and close its mouth with a characteristic smacking sound. Sheep and goats May show lameness. In pigs, lesions May be seen on snout and also on the feet.	may be controlled.
8.	Haemorrhagic septicaemia (HS)	Common disease for cattle and buffaloes but also occur among other species such as pigs, sheep, goats and many wild animals.	The disease starts with high fever, respiratory distress and haemorrhages maybe seen on the mucous membranes. There is lacrymation, nasal discharge, drop in milk production and anorexia. As the disease progress ear droop, animals are prostrated with cyanosis of mucous membranes. There May be oedema along the head, neck, thorax, vulva and anal areas. Sudden death occurs within few hours of clinical signs.	Affected animals may be treated with suitable antibiotics. Vaccination to be done in consultation with the veterinarians and as decided by state animal husbandry authorities. Strict biosecurity measures may be followed. Carcass may be disposed hygienically and stress factors may be reduced by good animal husbandry practices.
9.	*Peste desPetits Ruminants*(PPR)	Goats and sheep are most affected domestic animals.	Fever, nasal and ocular discharge, respiratory distress, necrotic lesions in buccal mucosa, gum, dental pad, palate, tongue and diarrhoea. Animals May die because of dehydration and pneumonia.	Vaccination of susceptible animals of above 3 months old age. Restriction on animal movement, strict biosecurity measures and proper disposal of carcass.
10.	Sheep and Goat pox (SGP)	Sheep and Goats	Respiratory distress and pock lesions over the non-hairy parts of body, more common in teat, udder, scortum, head, neck, ear, perineum, inner aspect of thighs and under tail.	Vaccination of susceptible animals of above 3 months old age. Symptomatic treatment of affected animals. Restriction on animal movement, strict biosecurity measures and proper disposal of carcass.

11.	Swine Fever (SF)	Pigs	Fever, Conjunctivitis, purplish discolouration of snout, ears, abdomen, innerside of the legs and staggering gait.	Vaccination of susceptible animals. Restriction on animal movement, strict biosecurity measures and proper disposal of carcass
12.	Theileriosis (TE)	Large Ruminants. Cross bred cattle are more vulnerable.	High temperature, yellowish eye, sometime eye May be heavily swollen, icteric mucosal membrane of rectum, dark yellowish urine, sometime May reach to coffee colour. Antibiotic is of no use to check fever.	Periodical application of acaricides in and around the animal shed and on the animals. Therapeutic treatment of Buparvaquone can be useful in both early and advanced stages of the infection.
13.	Trypanosomiasis (TR)	Domestic and wild carnivores and herbivores including cattle, buffalo, horse, donkey, camel, dog and cats. Buffaloes are known as carriers.	Fluctuating high fever which is not responded by antibiotic, swollen lymph gland, chronic emaciation and weakness, loss of appetite, gradual loss of production.	The affected animal should be treated with Diaminazine compounds or chloride and sulphate salts of Quinapyramine. Periodical spray of insecticide in and around animal shed to remove the flies.

iv) Risk Prediction - Livestock Disease forewarning Maps

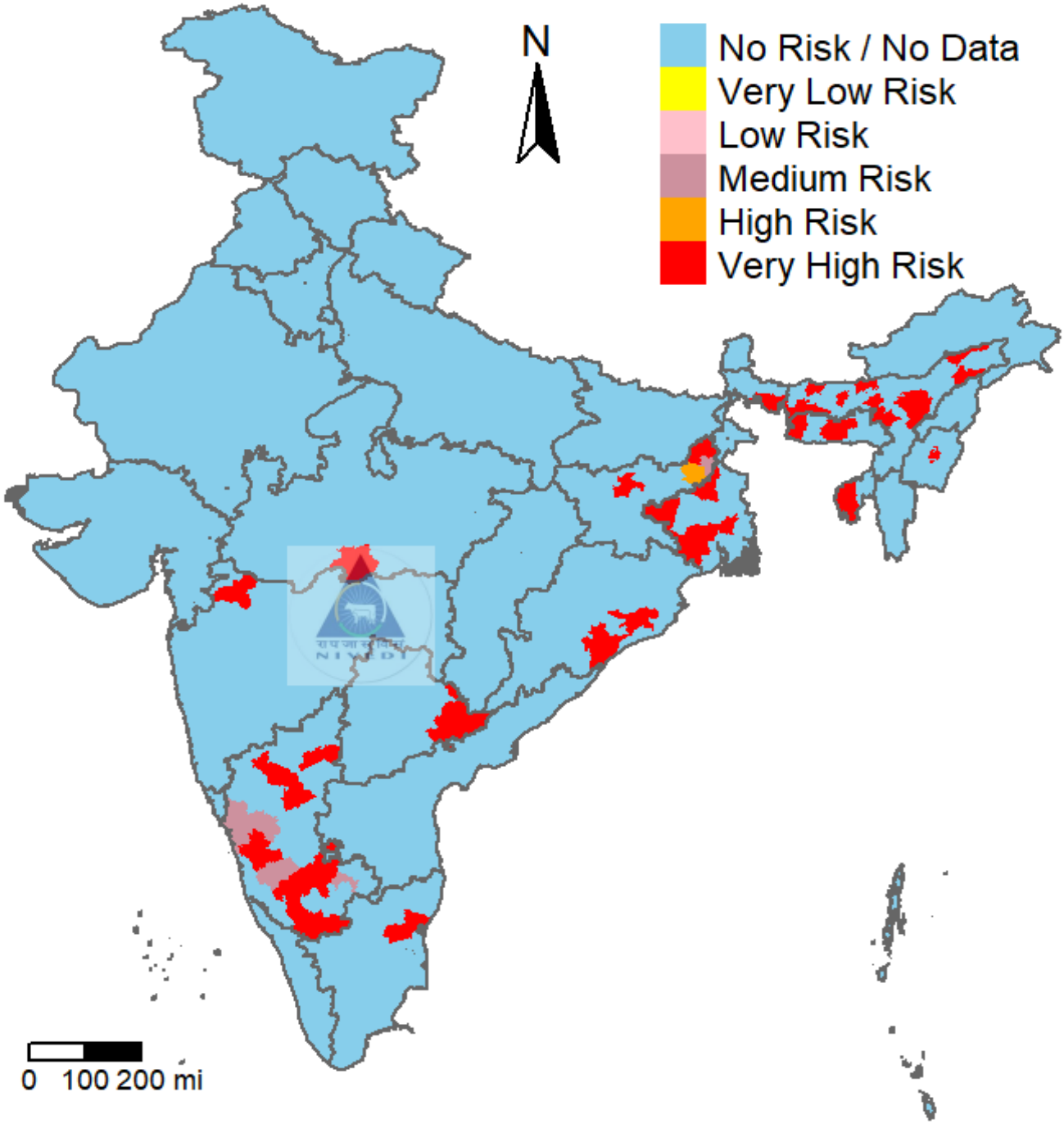


Risk Prediction of Babesiosis for the month of November 2020

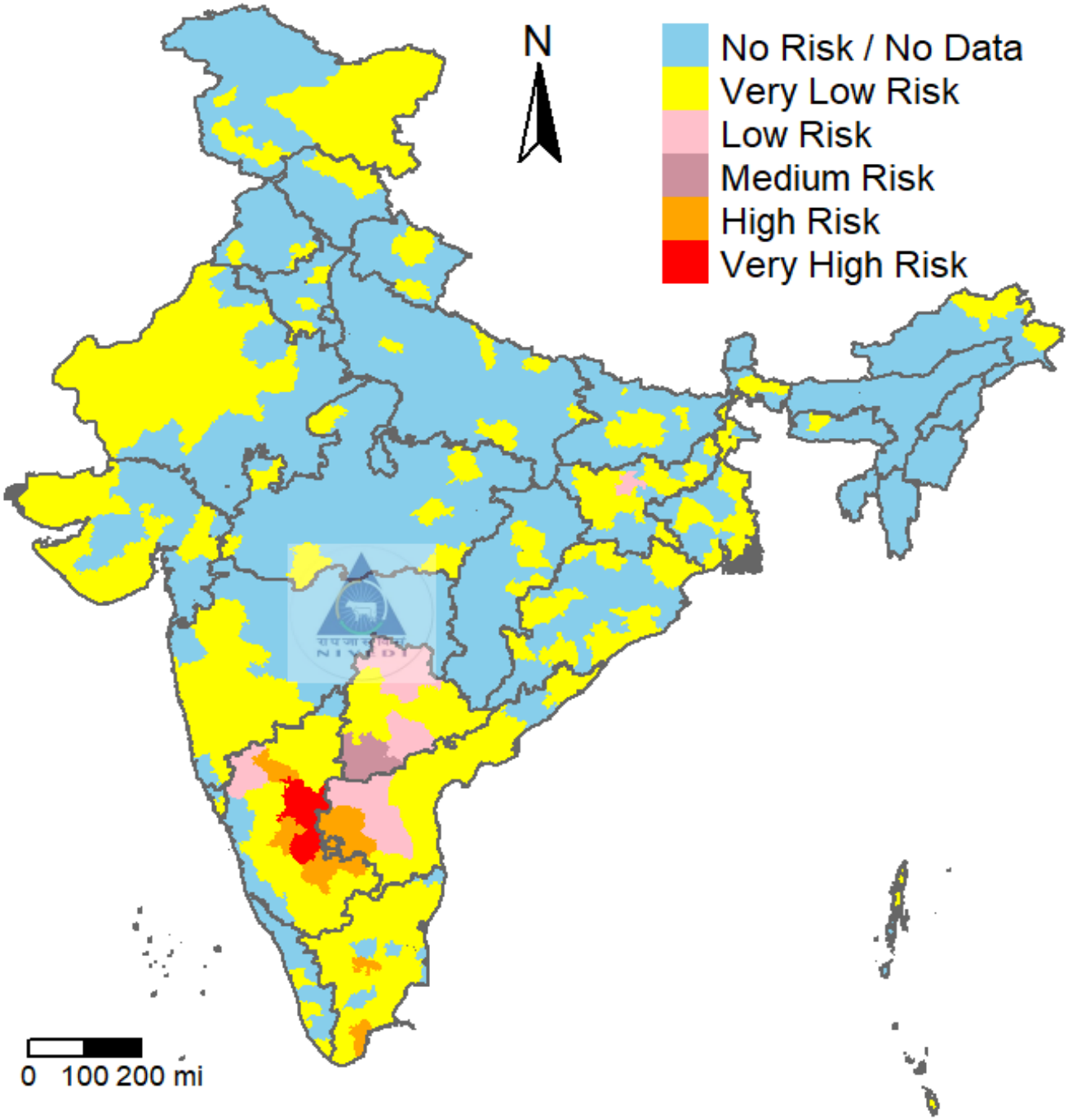


N

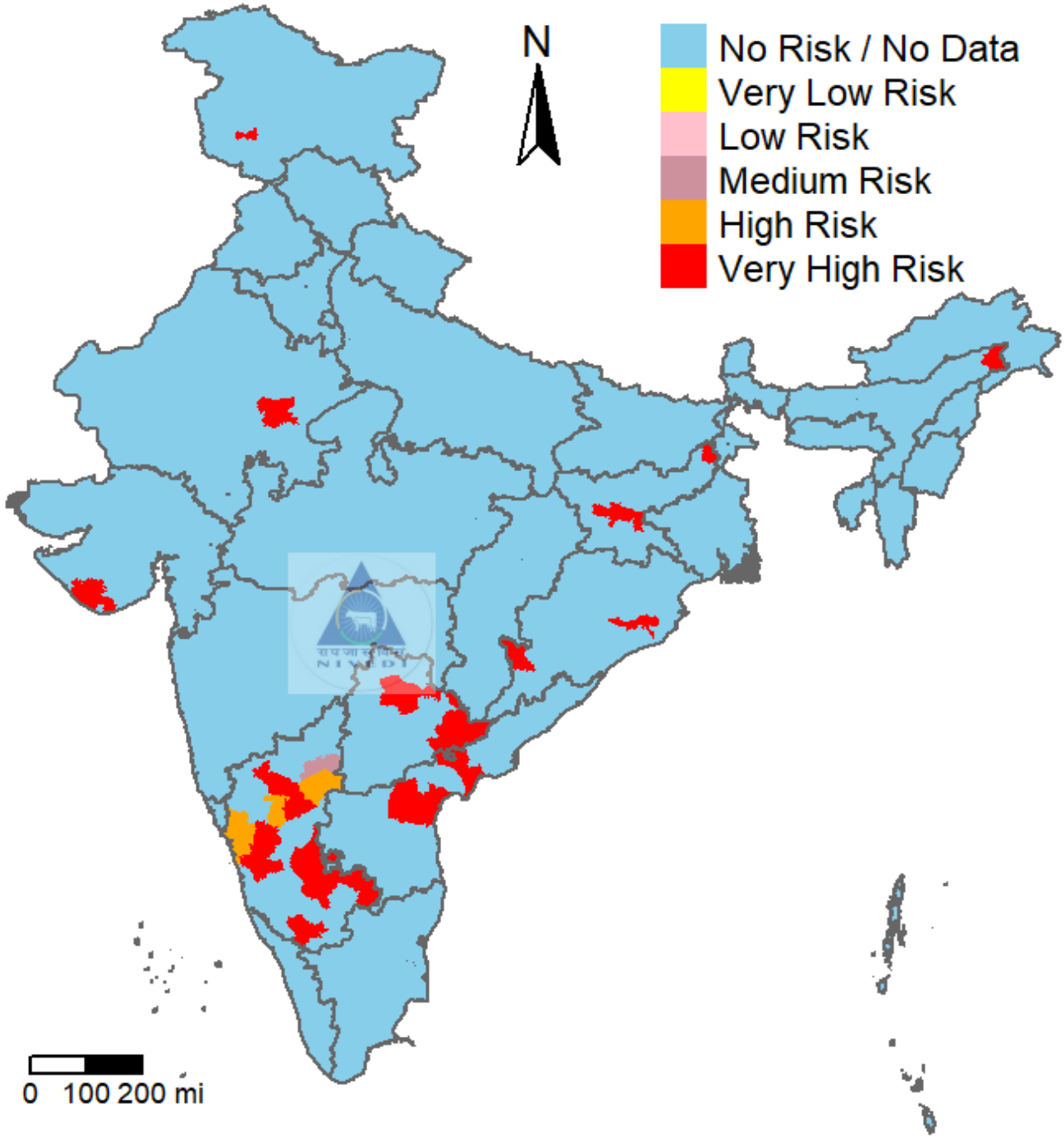
Risk Prediction of Black quarter for the month of November 2020



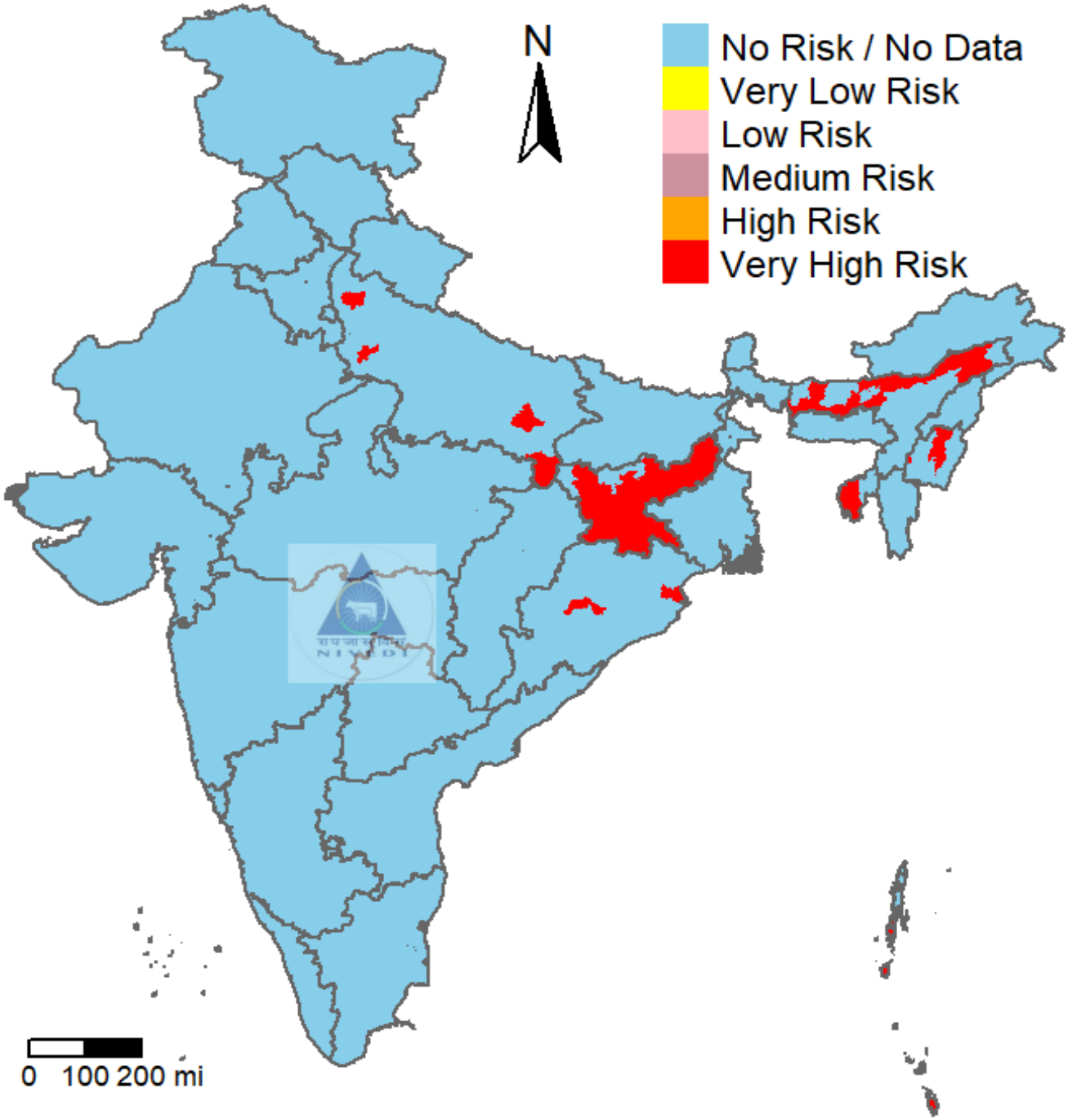
Risk Prediction of Bluetongue for the month of November 2020



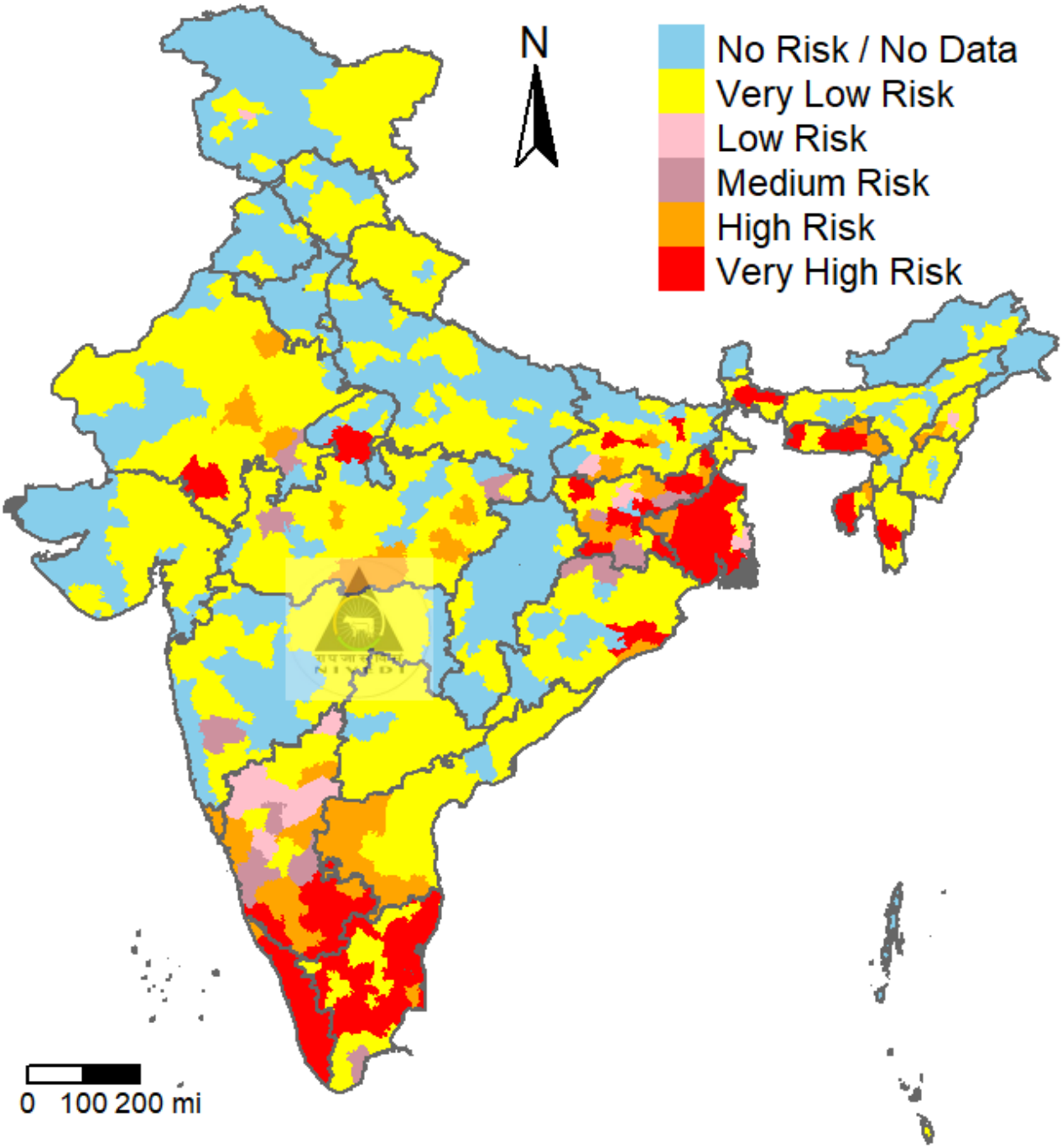
Risk Prediction of Enterotoxemia for the month of November 2020



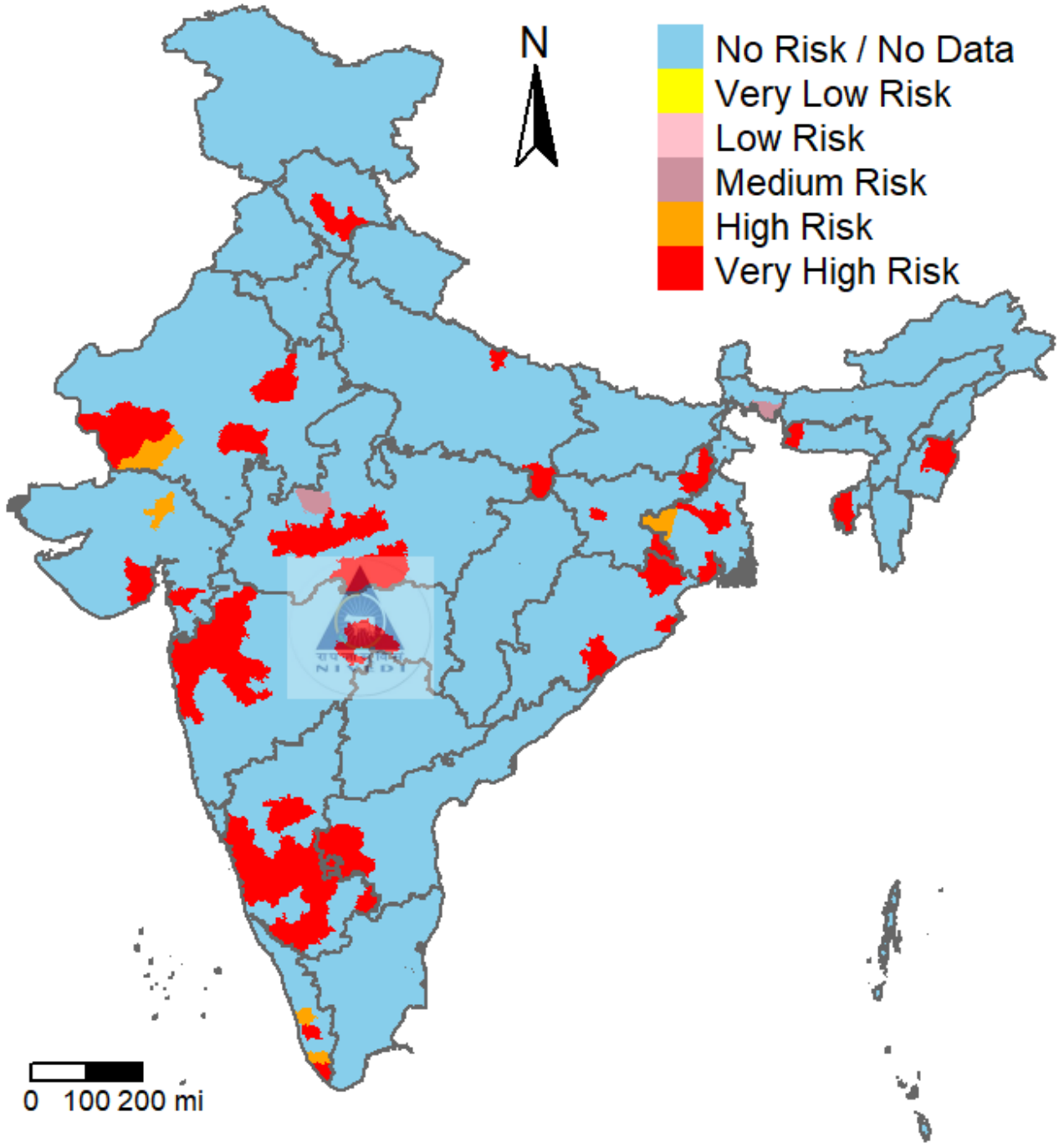
Risk Prediction of Fascioliasis for the month of November 2020



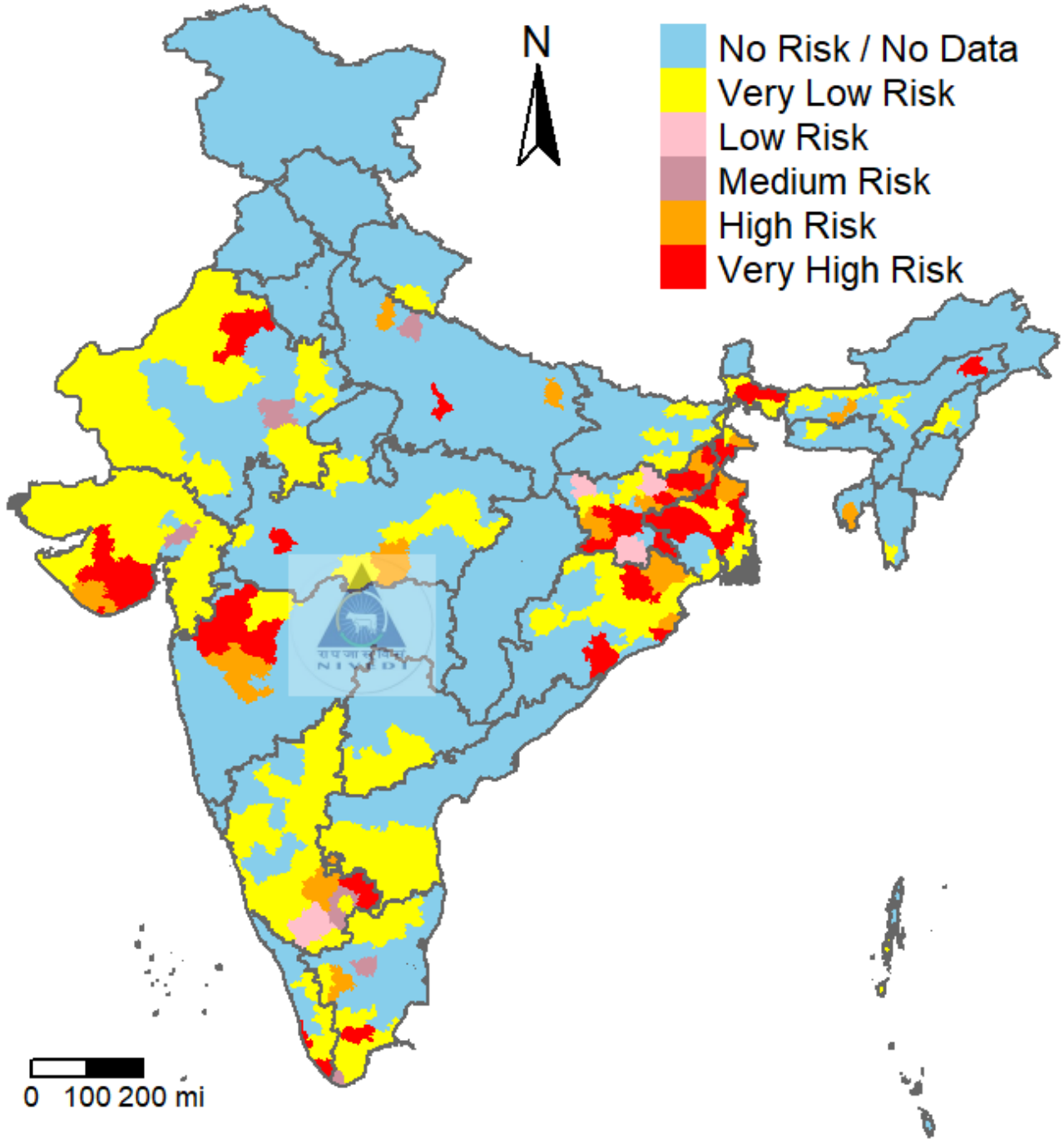
Risk Prediction of Foot and mouth disease for the month of November 2020



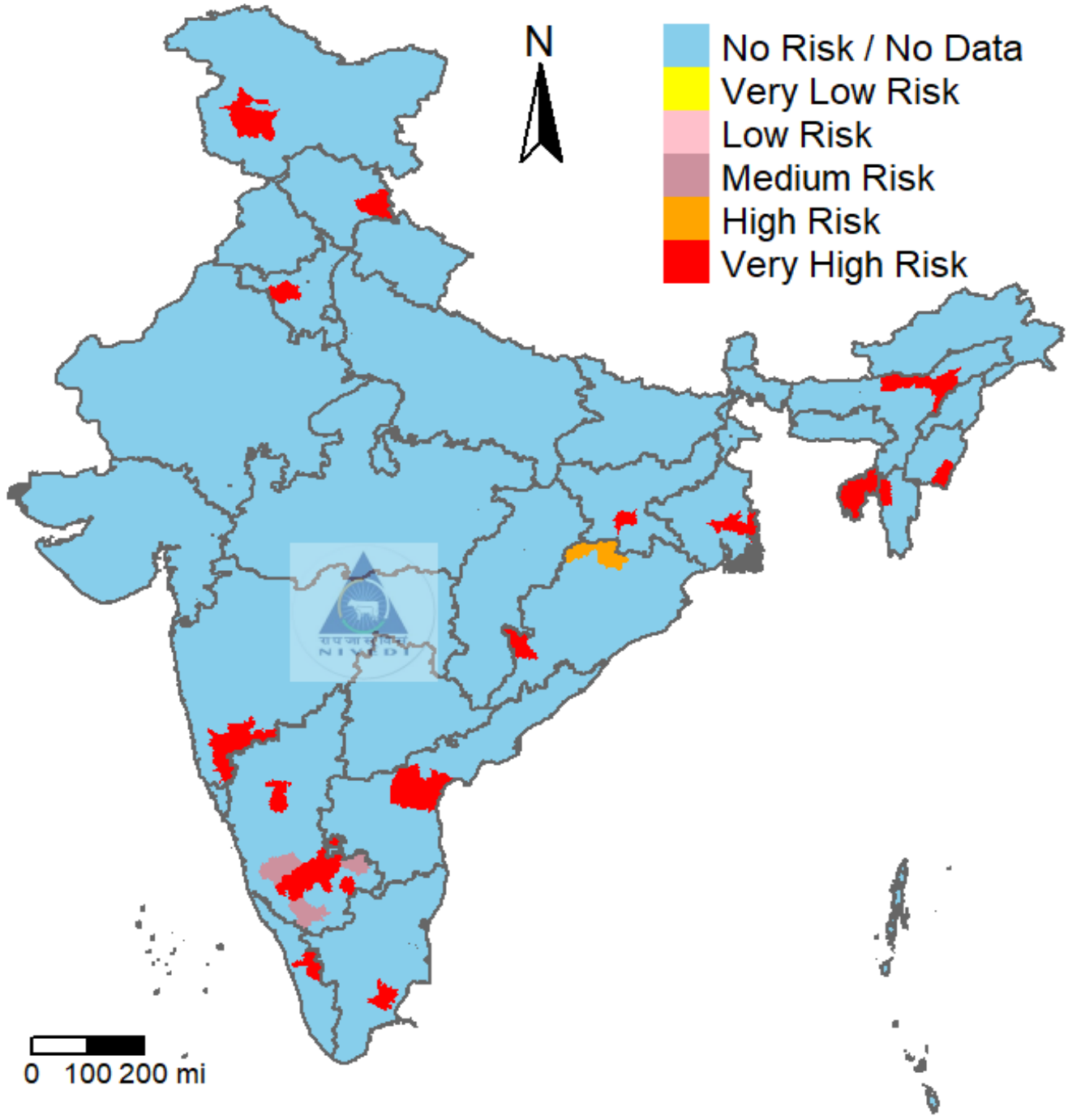
Risk Prediction of Haemorrhagic septicaemia for the month of November 2020



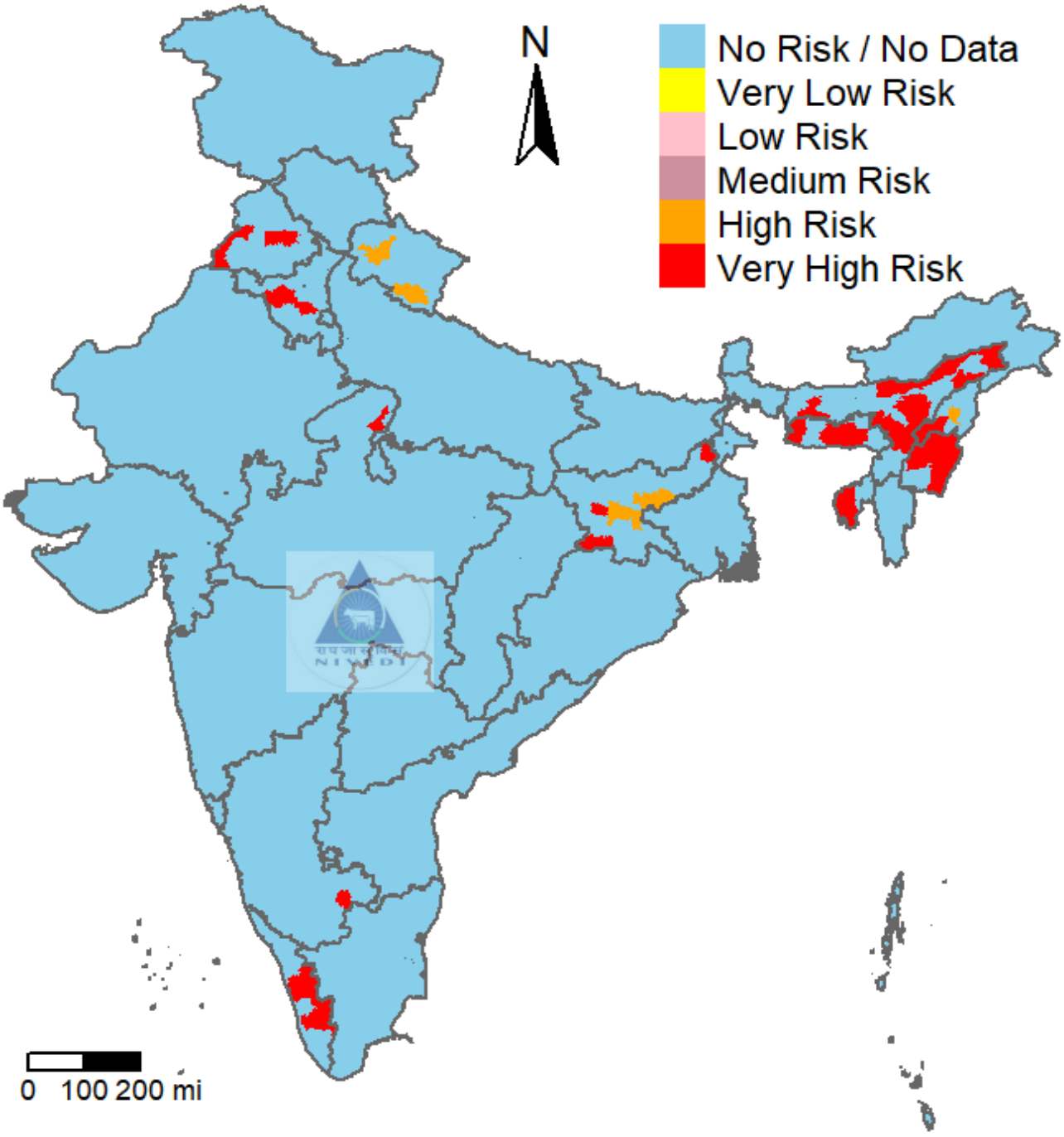
Risk Prediction of Peste des petits ruminants for the month of November 2020



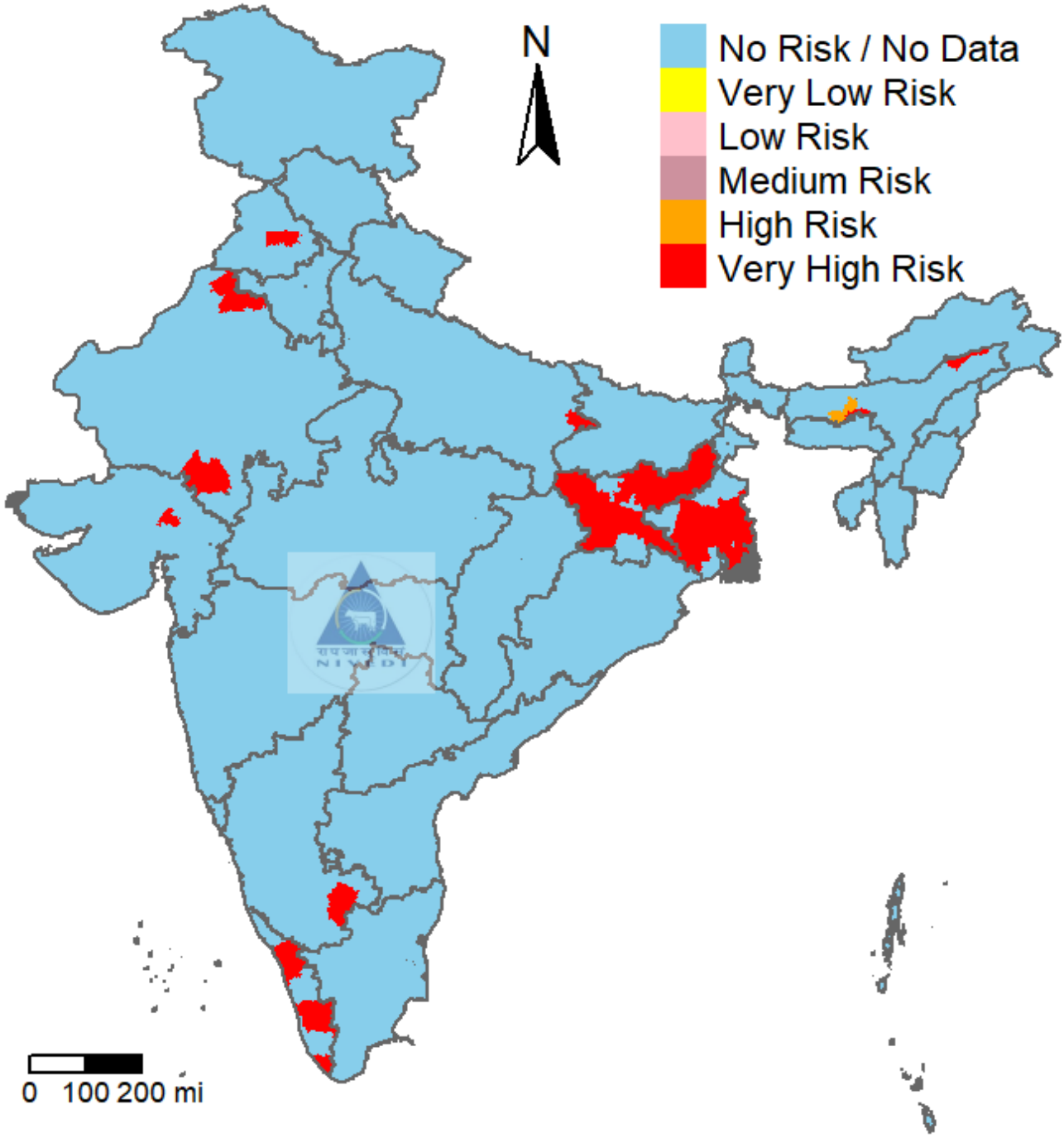
Risk Prediction of Sheep and Goat pox for the month of November 2020



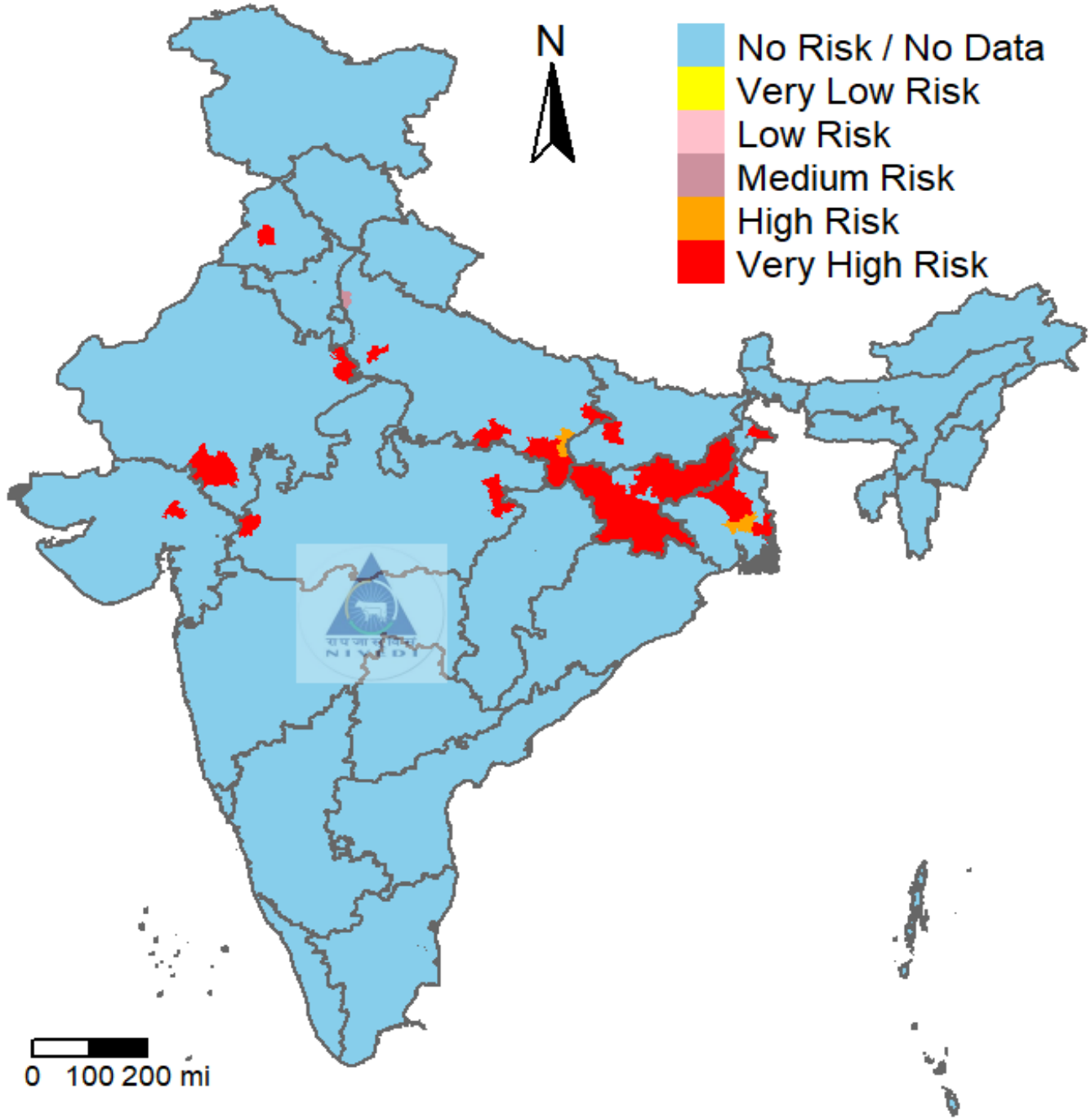
Risk Prediction of Swine fever for the month of November 2020



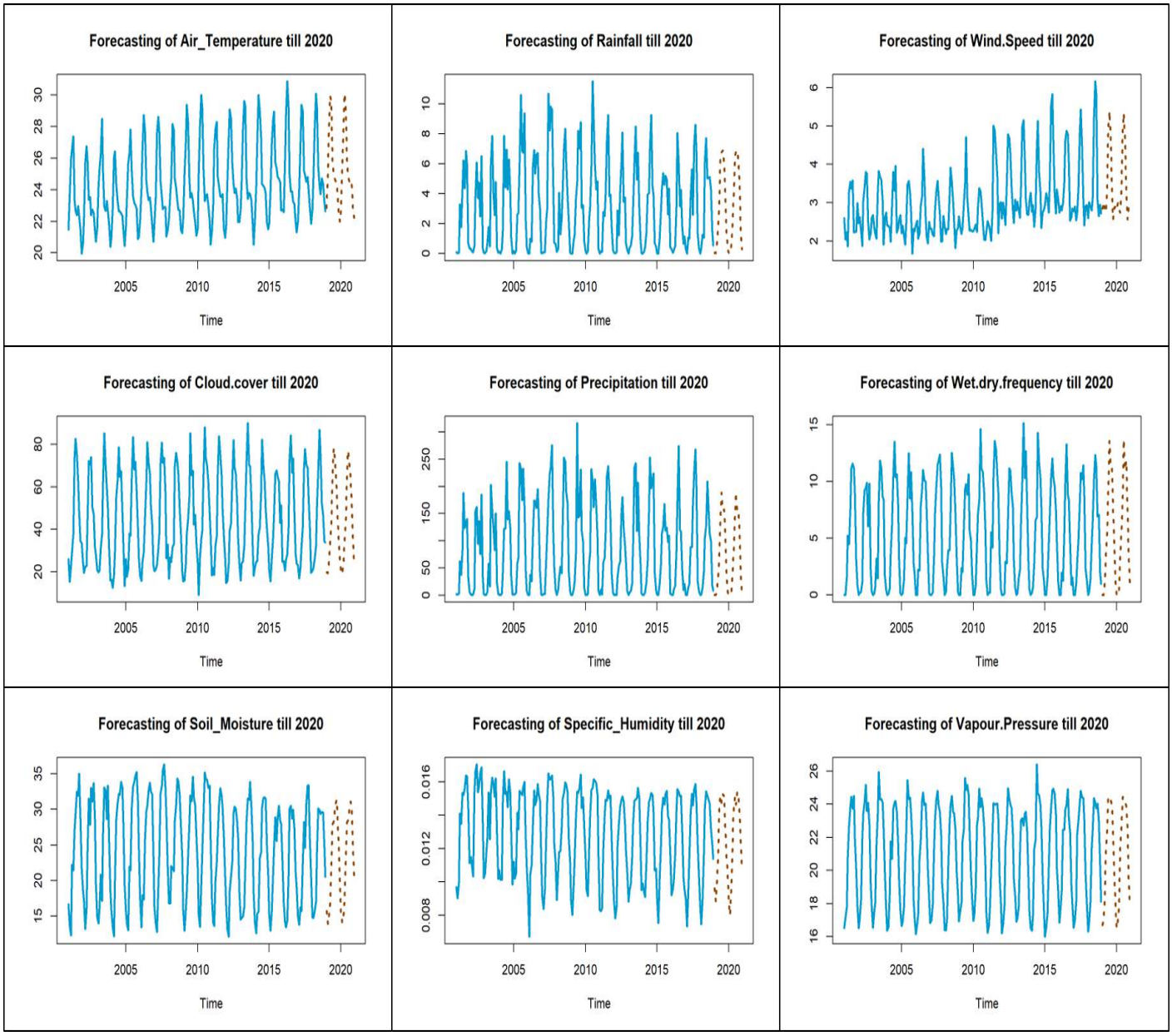
Risk Prediction of Theileriosis for the month of November 2020

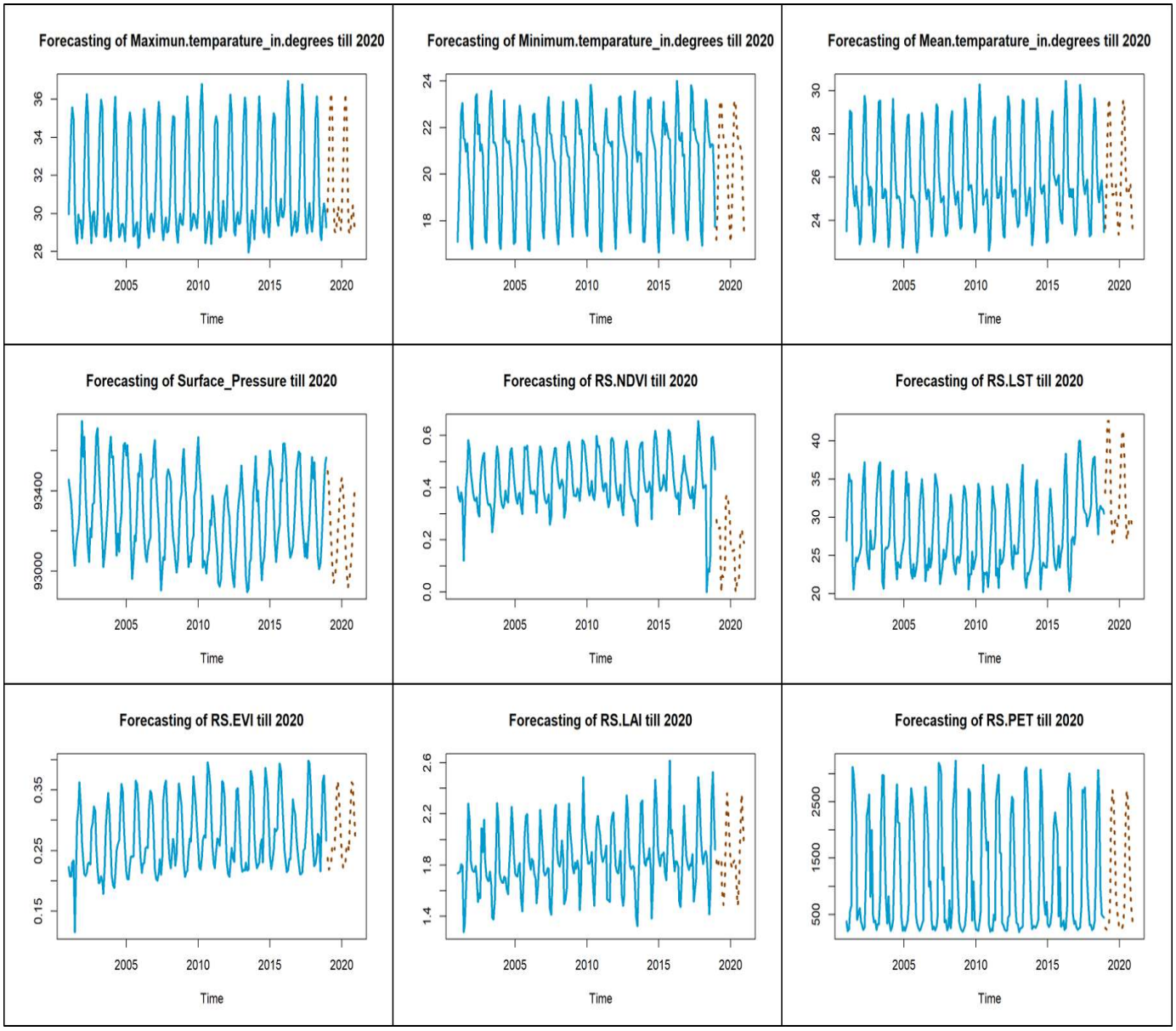


Risk Prediction of Trypanosomiasis for the month of November 2020



V. Forecasting of remote sensing and meteorological parameters till December 2020 (Ex. Karnataka state)




Forecasting of Maximun.temparature_in.degrees till 2020
Forecasting of Minimum.temparature_in.degrees till 2020
Forecasting of Mean.temparature_in.degrees till 2020
Forecasting of Surface_Pressure till 2020
Forecasting of RS.NDVI till 2020
Forecasting of RS.LST till 2020
Forecasting of RS.EVI till 2020
Forecasting of RS.LAI till 2020
Forecasting of RS.PET till 2020
Time

6. Post prediction Validation

DIMAPUR | Publish Date: 4/14/2019 AH&VS TEAM VISITS AFFECTED AREAS UNDER MEDZIPHEMA,
Source: http://www.nagalandpost.com

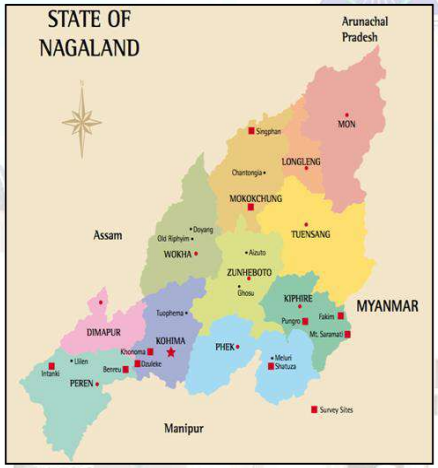
Following reports of a good number of buffaloes dying in a recent outbreak of suspected Haemorrhagic septicaemia (HS), a team from Animal Husbandry and Veterinary Services (AH&VS) department visited the affected areas under Medziphema on April 12. (Haemorrhagic septicaemia is a contagious bacterial disease that affects cattle and water buffaloes with a high mortality rate in infected animals).

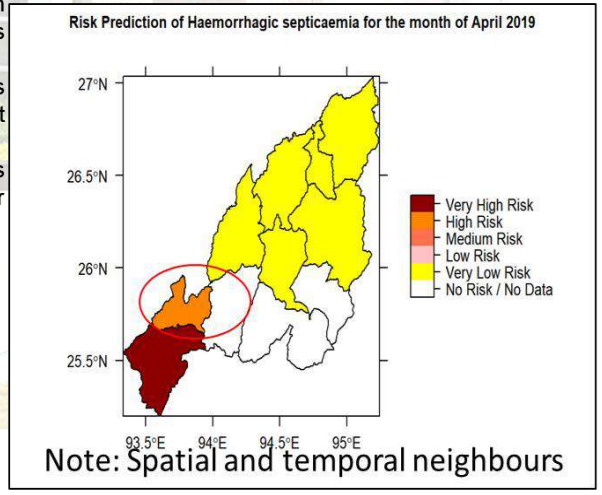
AH&VS, deputy director & principal investigator, AICRP-ADMAS, Dr S. Amenla Walling, in a press release reported that the team consisted of the department's director, Dr Temsumeren, along with additional director, Dr. Budhi Lama, and other officials from the department. The press release added that the area is prone to such kind of disease outbreaks and the department officials reminded villagers to cooperate with the department and vaccinate their animals against such outbreaks. The team told the villagers that even an outbreak can be contained more effectively if villagers report the matter on time to the nearest Veterinary Health Centre.

The villagers admitted in the meeting that they had not reported the recent outbreak to the department initially. The director appreciated the CVO Dimapur and his Rapid Response Team for their quick action after receiving information and for remaining stationed in the outbreak area to date. Free medicine was also distributed among the villagers. The department, through the press release also appealed to everyone to report such matters to the nearest Veterinary Health Centre (so that qualified staff may intervene quickly), instead of publicizing it in other ways. It stated that the department is prepared to extend services to any outbreak of diseases in animals to control such things.

The press release also pointed out that to control the recent outbreak, the department had to direct its officials to make their own transport arrangements to go to the affected areas because the State Election department did not consider an appeal to exempt the department's emergency duty vehicle from election duty.

Meanwhile, when contacted, Dr S. Amenla Walling told Nagaland Post that it is difficult to say if the disease has been fully contained since its free grazing season for the animals, but the department is doing its best under the circumstances.





NIVEDI PREDICITONS

Districts of Nagaland	HS prediction for February 2019	HS prediction for March 2019	HS prediction for April 2019
Peren	VLR	VLR	VHR
Dimapur	VLR	NR	HR
Kohima	VLR	VLR	NR
Wokha	VLR	NR	VLR

6.1 Correlational Assessment

The number of outbreaks predicted and outbreaks actually reported were reported in table 6.1, it is noticed from the table that, outbreaks predicted in the advance two months and alerts were issued timely that helped the stakeholders to take appropriate preventive measures with in time accordingly the reported outbreaks are very less. Though the use of artificial Intelligence system is more beneficial for accurately predicting the livestock disease, there are yet number of limitations, namely, there are expected to be under reporting and also non-reporting cases which created the uncertainties in the model predictions while translating model inputs in to model outputs. However, identifying these uncertainties in the prediction using statistical models and highlights the importance of quality data may improve the model accuracy and confidence while building the model for livestock disease forecasting

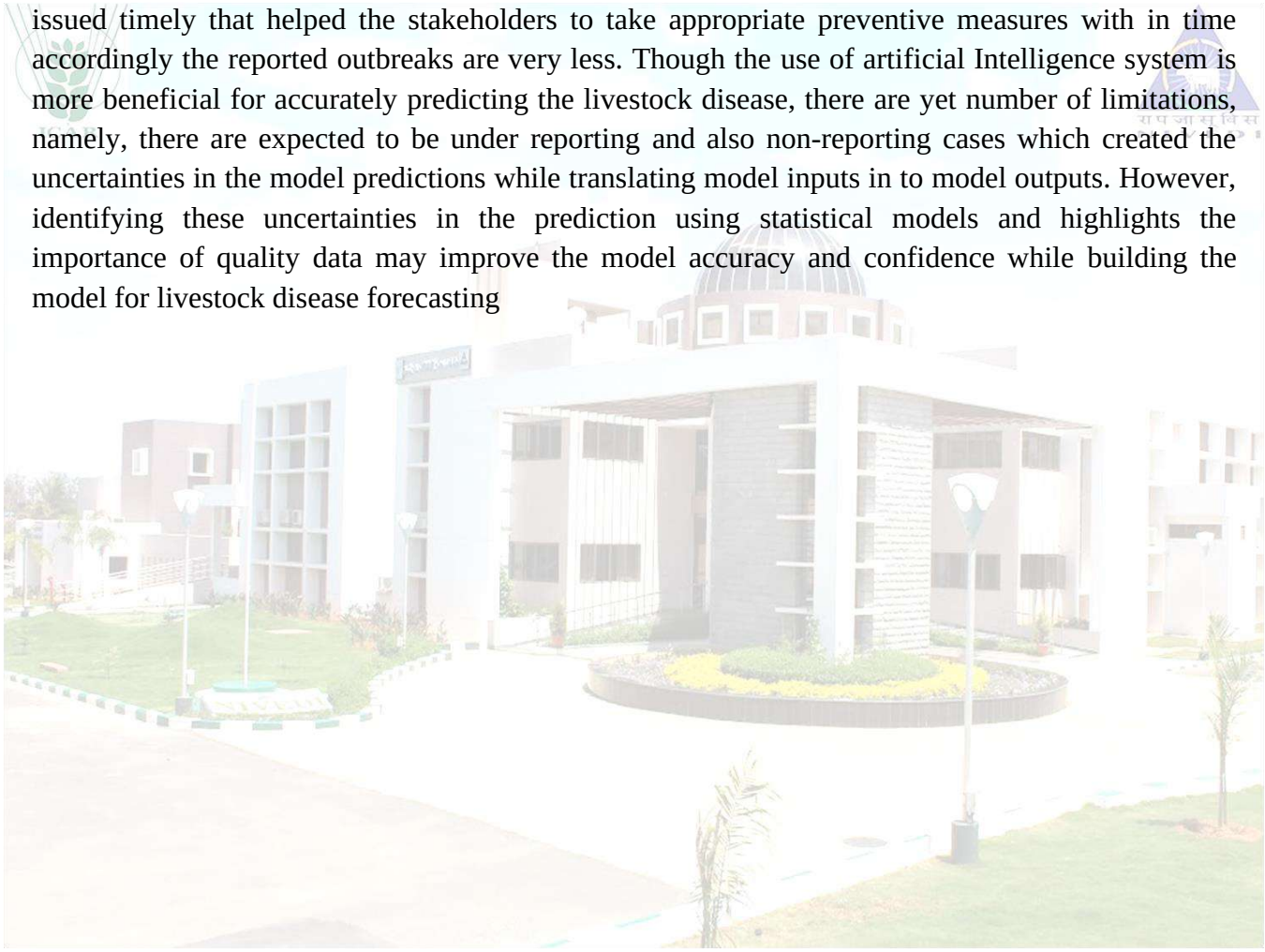


Table 6.1: Number of districts predicted for livestock diseases and reported (after two months)

Livestock diseases	January-2019		February-2019	
	No of Districts predicted for the disease	No of districts reported the disease	No of Districts predicted for the disease	No of districts reported the disease
Anthrax	13	3	7	0
Babesiosis	36	23	24	16
Black quarter	29	2	18	1
Bluetongue	17	NA	16	0
Enterotoxaemia	55	19	10	1
Fascioliasis	86	18	39	23
Foot and mouth disease	35	5	50	13
Haemorrhagic septicaemia	35	22	12	4
Peste des petits ruminants	35	22	14	9
Sheep & Goat pox	39	9	19	9
Swine fever	16	1	10	2
Theileriosis	32	26	27	15
Trypanosomiasis	35	23	28	23

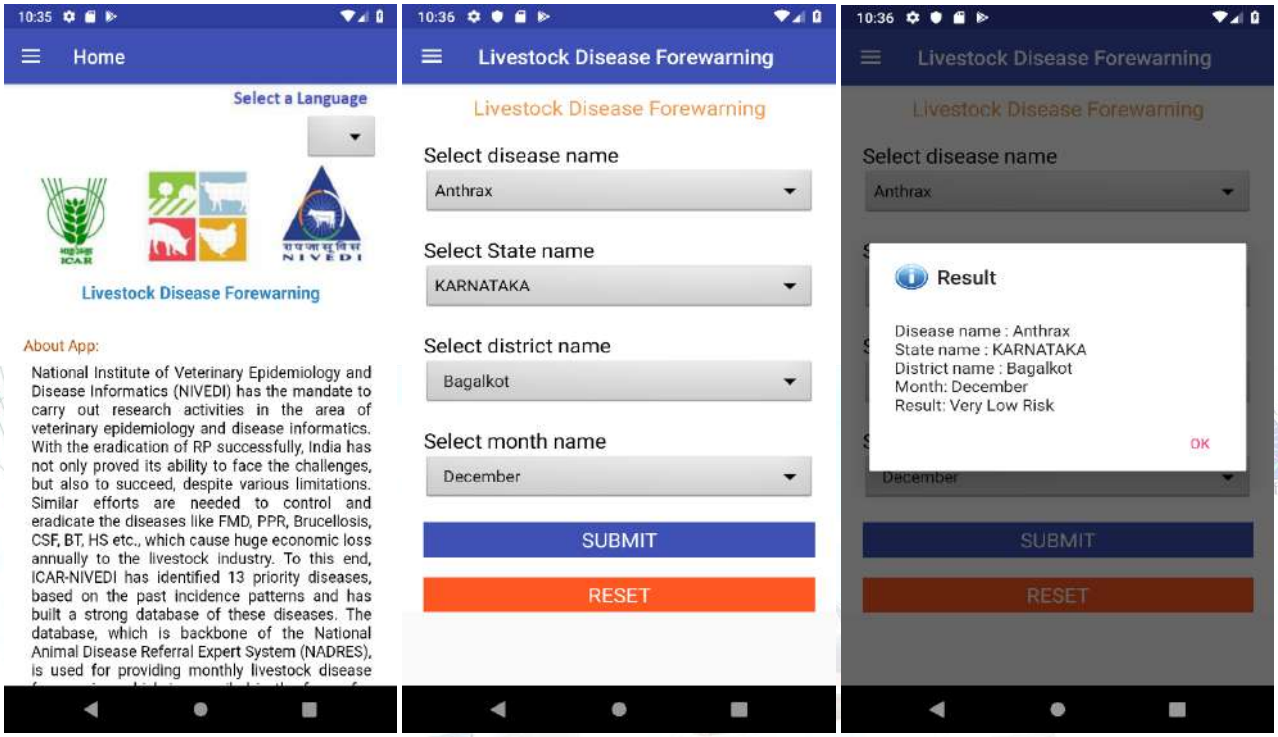
*which takes in to account of action taken for prediction and non-reporting of cases

7. Launch of Mobile Android app.&link to download

Livestock forewarning application **(**LDF**)** can be downloaded following the link provided**:**http**://**www**.**nivedi**.**res**.**in/android_nadres/LDF**.**apk and google play store link also provided https://play.google.com/store/apps/details?id=info.androidhive.ldf

Further launch of LDF application was done, the news provided below**.**

Livestock Disease Forewarning (LDF Mobile App)



To extend the reach of the NADRES forewarning bulletin among the various stakeholders, a Mobile Application named Livestock Disease forewarning app "LDF-Mobile *App"* was developed. The forewarning methodology adapted in the "mobile app" remains the same as monthly bulletin; it provides user interface to know the predicted forewarning results stored in NADRES MySQL database. A PHP web-based service is developed in Java to extract the results of forewarning two months in advance by keying state name, district name and disease name and display the same in the mobile app. In addition to forewarning, the LDF-Mobile App also provides the details of clinical samples to be collected in case of outbreaks of the listed diseases for laboratory confirmation. Immediate preventive measures to be taken up in case of positive prediction/disease confirmation. The LDF mobile app is available at ICAR-NIVEDI website. It is available on Google play store

8. Appendix

a) R Code

```
#pars month_number=8; year_number=2006; current_year=2017;

nadres_func=function (current_year, year_number, month_number)

{

args = commandArgs(trailingOnly=TRUE)

if (length(args)<3) {

stop("Correct number of arguments must be supplied", call.=FALSE)

 }

current_year=args[1]

year_number=args[2]

month_number=args[3]

df_total<-NULL

month_name=data.frame(month=c(1:12),

month_names=c("February","February","October","October","May","October","October","October","October","October","November","December")

)

ss<-fread(file="NADRES.csv",header=T,check.names = F)

col_pars=names(ss)

vars= paste(col_pars[7:ncol(ss)],collapse = "+")

options(verbose = F)

for(disease in c(8,10,11,12,24,31,35,37,48,60,62,65,70,72,79))

{

# disease=8

rs<-dbSendQuery(mydb,"SELECT index_state.state_name,index_state.state_id,index_district.district_id,
index_district.district_name, year_list.year, outbreak_data_final.month,
ls_sp_index.species_name,disease_master.disease_id, disease_master.disease_name,
outbreak_data_final.number_of_outbreaks, outbreak_data_final.number_susceptible,
outbreak_data_final.number_of_attacks, outbreak_data_final.number_of_deaths


 FROM ls_sp_index INNER JOIN (year_list INNER JOIN (disease_master INNER JOIN (index_district INNER JOIN
(index_state INNER JOIN outbreak_data_final ON index_state.state_id = outbreak_data_final.state_id) ON
```

```
index_district.district_id = outbreak_data_final.district_id) ON disease_master.disease_id =
outbreak_data_final.disease_id) ON year_list.year = outbreak_data_final.year) ON ls_sp_index.species_id =
outbreak_data_final.species_id; ")

data = fetch(rs, n=-1)

 # year change

data<-subset(data,data$year>=year_number&data$disease_id==disease)

df<-sqldf("SELECT
state_id,state_name,district_id,district_name,disease_id,disease_name,month,sum(number_of_outbreaks)as outbreak
FROM data GROUP BY state_id,district_id,state_name,district_name,month,disease_id,disease_name",drv="SQLite")

ss1<-subset(ss,ss$disease_id==disease)

attach(ss1,warn.conflicts = F)
attach(df,warn.conflicts = F)

dd<-merge(ss1, df, by = c("state_id","district_id","disease_id","month"),all.x=TRUE)

attach(dd,warn.conflicts = F)

out<-data.frame(outbreak)

out<-ifelse(outbreak>=1,1,0)

out[is.na(out)]<-0

final<-cbind(dd,out)

 final1<-final[which(final$disease_id==disease),]

cat("For disease: ",as.character(unique(ss1["disease_name"])),"\n")

ncs= ncol(final1)-5

temp = data.frame(final1[,8:ncs])

for(i in 1:ncol(temp)){

temp[is.na(temp[,i]), i] <- mean(temp[,i], na.rm = TRUE)

 }

 final2<-
cbind(final1$state_id,final1$state_name.x,final1$district_id,final1$district_name.x,final1$disease_id,final1$disease_na
me.x,final1$out,final1$month,temp)

setnames(final2,old=c("final1$state_id","final1$state_name.x","final1$district_id","final1$district_name.x","final1$dis
ease_id","final1$disease_name.x","final1$out","final1$month"),new=c("state_id","state_name","district_id","district_n
ame","disease_id","disease_name","out","month"))



formula=paste("out ~",vars)

as.formula(formula)
```

```
model<-glm(formula,data = final2, family = binomial(link="logit"),maxit=20)

new<-data.frame(final2[,8:ncol(final2)])

prediction<-predict(model,type="response")

n2=randomForest(as.formula(formula),final2)
 prediction_rf<-predict(n2,type="response")

 gbm_model=gbm.step(data=final2, gbm.x = 8:ncol(final2), gbm.y = 7, family = "bernoulli", tree.complexity = 1, learning.rate =
0.01,
                bag.fraction = 0.5, n.trees = 5,keep.fold.fit=T,tolerance.method="fixed"
                , step.size = 5,n.folds = 10)
 prediction_gbm<-predict(gbm_model,n.trees=gbm_model$gbm.call$best.trees,type="response")
 prediction=numeric()
 for (i in 1:length(prediction_glm)) {
  # if(prediction_glm[i]>prediction_rf[i])
  # {
  #   if(prediction_glm[i]>prediction_gbm[i])
  #   {
  #     prediction[i]=prediction_glm[i]
  #   }
    if(prediction_glm[i] >= prediction_gbm[i] &&prediction_glm[i] >= prediction_rf[i])
    {
      prediction[i]=prediction_glm[i];
    }

    if(prediction_gbm[i] >= prediction_glm[i] &&prediction_gbm[i] >= prediction_rf[i])
    {
      prediction[i]=prediction_gbm[i];
    }

    if(prediction_rf[i] >= prediction_glm[i] &&prediction_rf[i] >= prediction_gbm[i]) {
      prediction[i]=prediction_rf[i];
    }

    }
summary(prediction)
vv<-round(prediction,2)

 df1<-cbind(final2,vv)

df_total<-rbind(df_total,df1)

gc()

}

f=function(m){

if(m<=0.0) i=1

else if(m>=0.0 && m<=0.20) i=2

else if(m>=0.21 && m<=0.40) i=3

else if(m>=0.41 && m<=0.60) i=4


else if(m>=0.61 && m<=0.80) i=5

elsei=6
```

```
}
df_total$cate=factor(mapply(f,df_total$vv),levels=1:6,labels=c("","","","MR","","HR"))
write.csv(df_total,"nadres_outbreak.csv")
###### ACCURACY
df_total=read.csv("nadres_outbreak.csv",header = T)
dir.create(path = paste(month_name[month_number,2],current_year))
df_poa=df_total
df_poa$cate=factor(mapply(f,df_poa$vv),levels=1:6,labels=c(0,0,0,0,1,1))
df_poa=df_poa[which(df_poa$month==month_name[month_number,1]),]
df_p=df_poa[,c("disease_name","out","cate")]
df_acc=cbind(data.frame(c(1:ow(df_tot_res))),data.frame(df_tp_tn[,1]),(df_tp_tn[,2]/df_tot_res[,2])*100)
df_acc=setNames(df_acc,c("No","Disease","Accuracy"))
print(df_acc)
dis_acc=paste(paste(month_name[month_number,2]," ",current_year,"/",sep = ""),"Disease Accuracy
",month_name[month_number,2]," ",current_year,".csv",sep="")
write.csv(df_acc,dis_acc,row.names = F)
##########PLOT
i=1
plot_dir=paste(paste(month_name[month_number,2]," ",current_year,"/",sep=""),month_name[month_number,2],"
",current_year," N",sep="")
dir.create(path = plot_dir)
disease = c(8,10,11,12,31,35,37,48,60,65,70,72,79)
while(i<=length(disease))
{
kar=readOGR(dsn = "1shp/2011_Dist.shp",verbose = FALSE)
cols=as.character(unique(df_total[df_total$disease_id==disease[i],"disease_name"]))
df_disease=df_total[which(df_total$month==month_name[month_number,1] &df_total$disease_id==disease[i]),]
df_disease=df_disease[,c(2:5,(ncol(df_disease)-1))]

df_disease=setNames(df_disease,c("ST_CEN_CD","state_name","DT_CEN_CD","district_name","vv"))
kar@data=merge(data.frame(kar@data),data.frame(df_disease),by=c("ST_CEN_CD","DT_CEN_CD"),all.x=T)
```

```
kar$vv[is.na(kar$vv)]<-0

#View(kar@data)

colours<-c("#FFFFFF","#FFFF00","#FFC1C1","#FF7150","#FF8500","#FF0000")

kar$lb=factor(mapply(f,kar$vv),levels=1:6,labels=c("No Risk / No Data","Very Low
Risk","LowRisk","MediumRisk","HighRisk","Very High Risk"))

cols=gsub("&", "and",cols)

disname= gsub("\\."," ",cols)

cat("Plot for disease:",disname,"\n")

plot_loc=paste(plot_dir,"/",disname,"/",sep="")

dir.create(plot_loc)

file_name=paste(plot_loc,disname,".png",sep="")

plot_title= paste(disname," risk prediction(",month_name[month_number,2]," ",current_year,")",sep="")

png(file_name)

print(spplot(obj = kar,c("lb"),col.regions=colours,main = plot_title,scales=list(draw = TRUE)))

dev.off()

i=i+1
```

b) Abbreviations

NADRES : National Animal Disease Referral Expert System

R : R environment for statistical computing

BQ : Black Quarter

BT : Bluetongue

ET : Enterotoxaemia

FMD : Foot and Mouth disease

HS : Haemorrhagic Septicaemia

PPR : Peste des Petits Ruminants

SGP : Sheep and Goat pox

SF : Swine Fewer

hPa : Hectopascals

NR : No risk/No data available

VLR : Very low risk

LR : Low risk

MR : Moderate risk

HR : High risk

VHR : Very high risk

Questions and Answers on the 2019 Coronavirus Disease (COVID-19)

What causes COVID-19?

Coronaviruses (CoV) are a family of RNA (ribonucleic acid) viruses. They are called coronaviruses because the virus particle exhibits a characteristic 'corona' (crown) of spike proteins around its lipid envelope. CoV infections are common in animals and humans. Some strains of CoV are zoonotic, meaning they can be transmitted between animals and humans, but many strains are not zoonotic.

In humans, CoV can cause illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (caused by MERS-CoV), and Severe Acute Respiratory Syndrome (caused by SARS-CoV). Detailed investigations have demonstrated that SARS-CoV was transmitted from civets to humans, and MERS-CoV from dromedary camels to humans.

In December 2019, human cases of pneumonia of unknown origin were reported in Wuhan City, Hubei Province of China (People's Rep. of). A new CoV was identified as the causative agent by Chinese Authorities. Since then, human cases have been reported by almost all countries around the world and the COVID-19 event has been declared by the World Health Organization (WHO) to be a pandemic. For up to date information please consult the WHO website.

The CoV which causes COVID-19 has been named as SARS-CoV-2 by the International Committee on Taxonomy of Viruses (ICTV); this is the scientific name. The virus may also be referred to as "the COVID-19 virus" or "the virus responsible for COVID-19". COVID19 refers to the disease caused by the virus.

- **Are animals responsible for COVID-19 in people?**

The predominant route of transmission of COVID-19 is from human to human.

Current evidence suggests that the COVID-19 virus emerged from an animal source. Genetic sequence data reveals that the COVID-19 virus is a close relative of other CoV found circulating in *Rhinolophus* bat (Horseshoe Bat) populations. However, to date, there is not enough scientific evidence to identify the source of the COVID-19 virus or to explain the original route of transmission to humans (which may have involved an intermediate host).

Investigations are needed to find the source, to determine how the virus entered the human population, and establish the potential role of an animal reservoir in this disease.

Priorities for research to investigate the animal source were discussed by the OIE informal advisory group on COVID-19, now the OIE *ad hoc* Group on COVID-19 and the human-animal Interface, and were presented at the WHO Global Research and Innovation Forum (11-12 February 2020) by the President of the OIE Wildlife Working Group. For more information on the OIE *ad hoc* Group on COVID-19 and the human-animal Interface and the WHOR and D roadmap please see the links under 'more information' at the bottom of this page.

Can animals be infected with COVID-19 virus?

Now that COVID-19 virus infections are widely distributed in the human population there is a possibility for some animals to become infected through close contact with infected humans. Infection of animals with COVID-19 virus may have implications for animal health and welfare, and for wildlife conservation.

Several dogs and cats (domestic cats and a tiger) have tested positive to COVID-19 virus following close contact with infected humans. Further information reported to the OIE can be found below in the 'more information' section.

Studies are underway to better understand the susceptibility of different animal species to the COVID-19 virus and to assess infection dynamics in susceptible animal species.

Preliminary findings from laboratory studies suggest that, of the animal species investigated so far, cats are the most susceptible species for COVID-19, and cats can be affected with clinical disease. In the laboratory setting cats were able to transmit infection to other cats. Ferrets also appear to be susceptible to infection but less so to disease. In the laboratory setting ferrets were also able to transmit infection to other ferrets. Dogs appear to be susceptible to infection but appear to be less affected than ferrets or cats. Egyptian fruit bats were also infected in the laboratory setting but did not show signs of disease or the ability to transmit infection efficiently to other bats.

To date, preliminary findings from studies suggest that poultry and pigs, are not susceptible to SARS-CoV-2 infection. Currently, there is no evidence to suggest that animals infected by humans are playing a role in the spread of COVID-19. Human outbreaks are driven by person to person contact.

- **What do we know about COVID-19 virus and companion animals?**

  The current spread of COVID-19 is a result of human to human transmission. To date, there is no evidence that companion animals play a significant role in spreading the disease. Therefore, there is no justification in taking measures against companion animals which may compromise their welfare.

  Some examples of animal infections have been reported to the OIE. Further details on these events can be found in the 'more information' section. So far, these appear to be isolated cases, and there is no evidence that companion animals are playing a role in the spread of human disease.

  Preliminary findings from laboratory studies suggest that, of the animal species investigated so far, cats are the most susceptible species for COVID-19, and cats can be affected by clinical disease. In the laboratory setting cats were able to transmit infection to other cats. Ferrets also appear to be susceptible to infection but less so to disease. In the laboratory setting ferrets were able to transmit infection to other ferrets. Dogs appear to be susceptible to infection but appear to be less affected than ferrets or cats. To date, preliminary findings from studies suggest that poultry and pigs, are not susceptible to SARS-CoV-2 infection.

- **What precautionary measures should be taken when companion or other animals have close contact with human's sick or suspected with COVID-19?**

  Currently, there is no evidence that companion animals are playing a significant epidemiological role in this human disease. However, because animals and people can sometimes share diseases (known as zoonotic diseases), it is still recommended that people who are sick with COVID-19) limit contact with companion and other animals.

  When handling and caring for animals, basic hygiene measures should always be implemented. This includes hand washing before and after being around or handling animals, their food, or supplies, as well as avoiding kissing, licking or sharing food.

  When possible, people who are sick with COVID-19 should avoid close contact with their pets and have another member of their household care for their animals. If they must look after their pet, they should maintain good hygiene practices and wear a face mask if possible. Animals belonging to owners infected with COVID-19 should be kept indoors as much as possible and contact with those pets should be avoided as much as possible.

- **What can National Veterinary Services do with regards to companion animals?**

  Public Health and Veterinary Services should work together using a One Health approach to share information and conduct a risk assessment when a person with COVID-19 reports being in contact with companion or other animals.

  If a decision is made as a result of a risk assessment to test a companion animal which has had close contact with a person/owner infected with COVID-19, it is recommended that RT-PCR be used to test oral, nasal and fecal/rectal samples. Care should be taken to avoid contamination of specimens from the environment or by humans. Animals that test positive for COVID-19 should be kept away from unexposed animals and contact with those animals should be avoided as much as possible.

- **Are there any precautions to take with live animals or animal products?**

  Although there is uncertainty about the origin of the COVID-19 virus, in accordance with advice offered by the WHO, as a general precaution, when visiting live animal markets, wet markets or animal product markets, general hygiene measures should be applied. These include regular hand washing with soap and potable water after touching animals and animal products, as well as avoiding touching eyes, nose or mouth, and avoiding contact with sick animals or spoiled animal products. Any contact with other animals possibly living in the market (e.g., stray cats and dogs, rodents, birds, bats) should be avoided. Precaution should be taken to avoid contact with animal waste or fluids on the soil or surfaces of shops and market facilities.

  Standard recommendations issued by WHO to prevent infection spread include regular hand washing, covering mouth and nose with the elbow when coughing and sneezing and avoiding close contact with anyone showing symptoms of respiratory illness such as coughing and sneezing. As per general good food safety practices, raw meat, milk or animal organs should be handled with care, to avoid potential cross-contamination with uncooked foods. Meat from healthy livestock that

is prepared and served in accordance with good hygiene and food safety principles remains safe to eat. Further recommendations from WHO can be consulted.

The Codex Alimentarius Commission has adopted several practical guidelines on how to apply and implement best practices to ensure food hygiene (Codex General Principles of Food Hygiene, CXC 1- 1969), handle meats (Codex Code of Hygienic Practice for Meat, CXC 58 – 2005), and control viruses in foods (Guidelines for the Application of General Principles of Food Hygiene to the Control of Viruses in Food (CAC/GL 79-2012) and others which can be consulted on the Codex website.

Based on currently available information, there is no scientific evidence to justify introduction of additional sanitary measures for the international trade of animals or animal products for countries reporting cases of COVID-19 in humans. Similarly, precautions for packaging materials are unnecessary over and above the observation of basic hygiene, such as ensuring it is clean and free of visible contamination.

- **What are the Veterinary Authority's international responsibilities in this event?**

The infection of animals with COVID-19 virus meets the criteria of an emerging disease. Therefore, any (case of) infection of animals with the COVID-19 virus in (including information about the species, diagnostic tests, and relevant epidemiological information) should be reported to the OIE in accordance with the OIE *Terrestrial Animal Health Code*.

It is important for Veterinary Authorities to remain informed and maintain close liaison with public health authorities and those responsible for wildlife, to ensure coherent and appropriate risk communication messages and risk management.

It is important that COVID-19 does not lead to inappropriate measures being taken against domestic or wild animals which might compromise their welfare and health or have a negative impact on biodiversity.

In some countries, National Veterinary Services are supporting core functions of the public health response, such as screening and testing of surveillance and diagnostic samples from humans. Veterinary clinics in some countries are also supporting the public health response by donating essential materials such as personal protective equipment and ventilators.

Guidance on Veterinary Laboratory Support to the Public Health Response for COVID-19 is available at the bottom of this document.

https://www.oie.int/scientific-expertise/specific-information-and-recommendations/questions-and-answers-on-2019novel-coronavirus/

Customer/Client Feedback Form

Feedback for the Livestock Diseases forewarning bulletin of September 2020, Volume 8 and Issue 09

(Please return this duly fill in after receiving the outbreak report of November 2020)

1. **Details of the number of districts with diseases reported vs. forecast in your state.**

Sl. No	Diseases Name	No of districts outbreak occurred but not alerted**	Measure taken in case of disease forecasted: Yes or No**	Any other
1.	Anthrax			
2.	Babesiosis			
3.	Black Quarter			
4.	Bluetongue			
5.	Enterotoxaemia			
6.	Fascioliasis			
7.	Foot and mouth disease			
8.	Haemorrhagic septicaemia			
9.	Peste des Petits Ruminants			
10.	Sheep & Goat pox			
11.	Swine fever			
12.	Theileriosis			
13.	Trypanosomiasis			

**Details may be written here.

2. **What are the preventive measures taken in case of outbreak predicted?**

3. **How would you rate your satisfaction with the following aspects of the services you have received or accessed?**

Description	**Very satisfied**	**Satisfied**	**Unsatisfied**	**Not sure**
Quality of services provided				
Timeliness of alerts received				
Benefits from forecasting of livestock diseases				
Your awareness of this service				

4. **Suggestions for further improvement of report.**

Sign and Signature with Designation

AICRP centre:

Dated:

हर कदम, हर डगर
किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद

Agrisearch with a human touch

ICAR-National Institute of Veterinary Epidemiology and Disease Informatics (ICAR_NIVEDI),

P. B. No.6450, Yelahanka, Bengaluru-560064

Phone: +91-80-23093111, Fax: +91-80-23093222, E-mail: director.nivedi@icar.gov.in