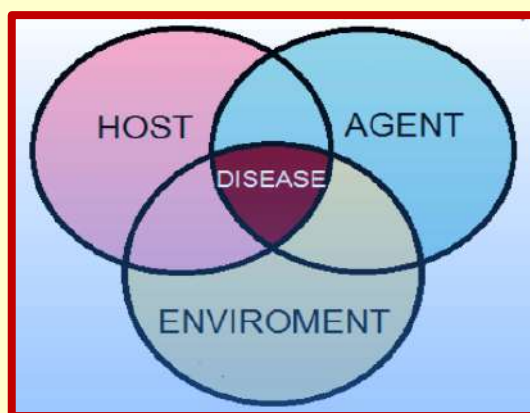




ANIMAL DISEASE SURVEILLANCE WEST BENGAL

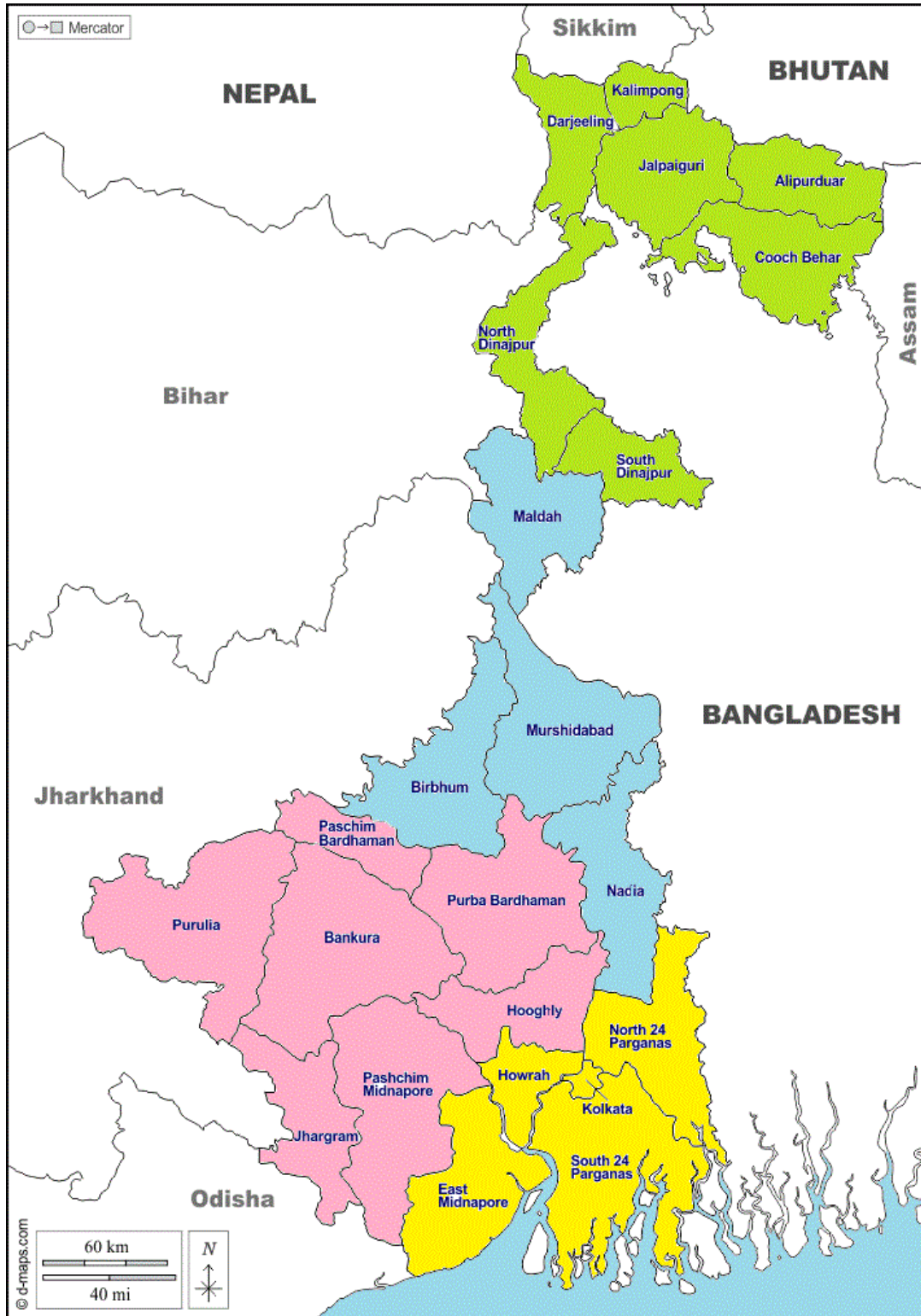


**ANNUAL REPORT
2023-24**



EPIDEMIOLOGICAL UNIT
DIRECTORATE OF ANIMAL RESOURCES & ANIMAL HEALTH
GOVERNMENT OF WEST BENGAL

ARD Zones



■ Jalpaiguri zone
■ Burdwan zone

■ Presidency zone
■ Murshidabad zone

পশ্চিমবঙ্গ সরকার
প্রাণী সম্পদ ও প্রাণী স্বাস্থ্য অধিকার

দূরভাষ : (০৩৩) ২৩৩৫-১১৪৫

মোবাইল : ৯৩৩১২৭৫৫২২

ফ্যাক্স : (০৩৩) ২৩৩৫-১১৮৭

ই-মেল : ডিএএইচডিএস.এআরডি-ডাব্লুবি@এনআইসি.ইন



Government of West Bengal
Directorate of Animal Resources & Animal Health

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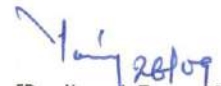
E-mail : dahvs.ard-wb@nic.in

P R E F A C E

As a sustainable source for growth of rural economy, employment generation, and earnings of foreign exchequer, the livestock sector plays a pivotal role in the socio-economic development of our State, through different pro-people activities of our esteemed Animal Resources Development Department. It is an important source of animal food production along with draught power and manure for crop production & fuel for domestic use. Thus, livestock makes a positive contribution to the socio-economic development of the common people of our State in particular and in general, entire rural India. The growth & development in the livestock sector is most significant in poverty alleviation, as it mostly comprises of the marginal and small farmers. Resultantly, the impact of animal diseases can be massive and diversified in the form of short fall in supply of animal foods particularly animal proteins, economic loss of the producer-farmers, deterioration of food quality and safety, loss of jobs and human health hazards through zoonotic diseases.

Having all these in the background, the Annual Report of Animal Disease Surveillance (ADS) of West Bengal for the year 2023-24, reflects the potential activities of the Directorate of Animal Resources and Animal Health under the Animal Resources Development Department of our State. It contains the records of all notifiable livestock and poultry diseases prevailed in the State. The data procured from the districts on different animal diseases scenario with morbidity, mortality etc. are documented, analyzed and presented in the Annual Report by the Epidemiological Unit of the Directorate through Animal Disease Surveillance under Central Sponsored Scheme, 'ASCAD'. Well-thought-out and carefully planned prophylaxis measures would aptly be implemented to reduce the incidence of animal diseases prevalent in our State, on the basis of the seasonal occurrence and geographical distribution depicted in this e-publication.

Hopefully, this e-publication would help the field veterinarians, research workers & planners engaged in gathering extensive knowledge for the prevention and control of different livestock and poultry diseases and thereby minimising the loss through those diseases would augment the growth of the economy centred on livestock sector of our State, as well as our Country.


[Dr. Yograj Tamang]

Director of Animal Husbandry &
Veterinary Services, West Bengal

কার্যালয় : প্রাণী সম্পদ ভবন, তৃতীয় তল, এল.বি.-২ ব্লক, সেক্টর-৩, লবণ হ্রদ, কলকাতা-৭০০ ১০৬

OFFICE : "PRANI SAMPAD BHAWAN", 2nd Floor, LB-2, Sector-III, Salt Lake, Kolkata-700 106

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3	Notifiable Diseases, Agro - climatic zone and Livestock population in West Bengal
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5	Foot & Mouth Disease (FMD)
6	Rabies
7	Anthrax
8	Haemorrhagic Septicaemia (HS)
9	Black Quarter (BQ)
10	Anaplasmosis
11	Theileriosis
<u>12</u>	Babesiosis
<u>13</u>	Trypanosomiasis
14	Equine Infectious Anaemia (EIA)
15	Peste -des - Petits Ruminants (PPR)
16	Goat Pox (GP)
17	Classical Swine Fever (CSF)
18	Avian Influenza (AI)
19	Ranikhet Disease (RD)
20	Infectious Bursal Disease (IBD)
21	Duck Plague (DP)
22	Fowl Pox
23	Fowl Cholera
24	Avian Salmonellosis
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INTRODUCTION

The Epidemiological Unit, Directorate of Animal Resources and Animal Health under Animal Resources Development Department, Government of West Bengal, had been rendered a centrally sponsored Scheme i.e. the Animal Disease Surveillance since 1979.

SCHEME:

NAME OF THE SCHEME	ANIMAL DISEASE SURVEILLANCE
LOCATION OF THE UNIT	EPIDEMIOLOGICAL UNIT INSTITUTE OF ANIMAL HEALTH & VETERINARY BIOLOGICALS, 37 BELGACHIA ROAD, KOLKATA-700037
AREA OF OPERATION	WEST BENGAL

The West Bengal is divided in three administrative divisions consisting of a group of districts in each division.

DIVISION	DISTRICTS
PRESIDENCY DIVISION	Kolkata, North 24 Parganas, South 24 Parganas, Howrah, Nadia and Murshidabad
BURDWAN DIVISION	Purba Burdwan, Paschim Burdwan, Hooghly, Birbhum, Bankura, Purba Medinipur, Paschim Medinipur, Jhargram and Purulia
JALPAIGURI DIVISION	Jalpaiguri, Alipurduar, Coochbehar, Darjeeling, Kalimpong, Uttar Dinajpur, Dakshin Dinajpur and Malda.

But for smooth running of the Departmental works, Animal Resources Development Department creates four Administrative zones headed by Joint Director in each zone.

ZONE	DISTRICT
PRESIDENCY	Kolkata, North 24 Parganas, South 24 Parganas, Howrah, Purba Medinipur
BURDWAN	Purba & Paschim Bardhaman, Hooghly, Paschim Medinipur, Jhargram, Bankura, Purulia
MURSHIDABAD	Murshidabad, Nadia, Birbhum, Malda
JALPAIGURI	Coochbehar, Alipurduar, Jalpaiguri, Darjeeling, Kalimpong, Uttar Dinajpur, Dakshin Dinajpur

STAFF PATTERN

- a) Deputy Director, ARD (Epidemiology) - W.B.H.A.H. & V.S. : One
- b) Assistant Director, ARD (Vety. R & I) - W.B.A.H. & V.S. : Two
- d) English Stenographer - Ministerial Service : One
- e) Peon - Group 'D' : One

Dr. TAPABRATA SAHA, Assistant Director (VR & I), ARD, IAH&VB was the only person in this Unit and officiating the duties as In-charge, Deputy Director, ARD, Epidemiological Unit during the reporting period 2023-24.

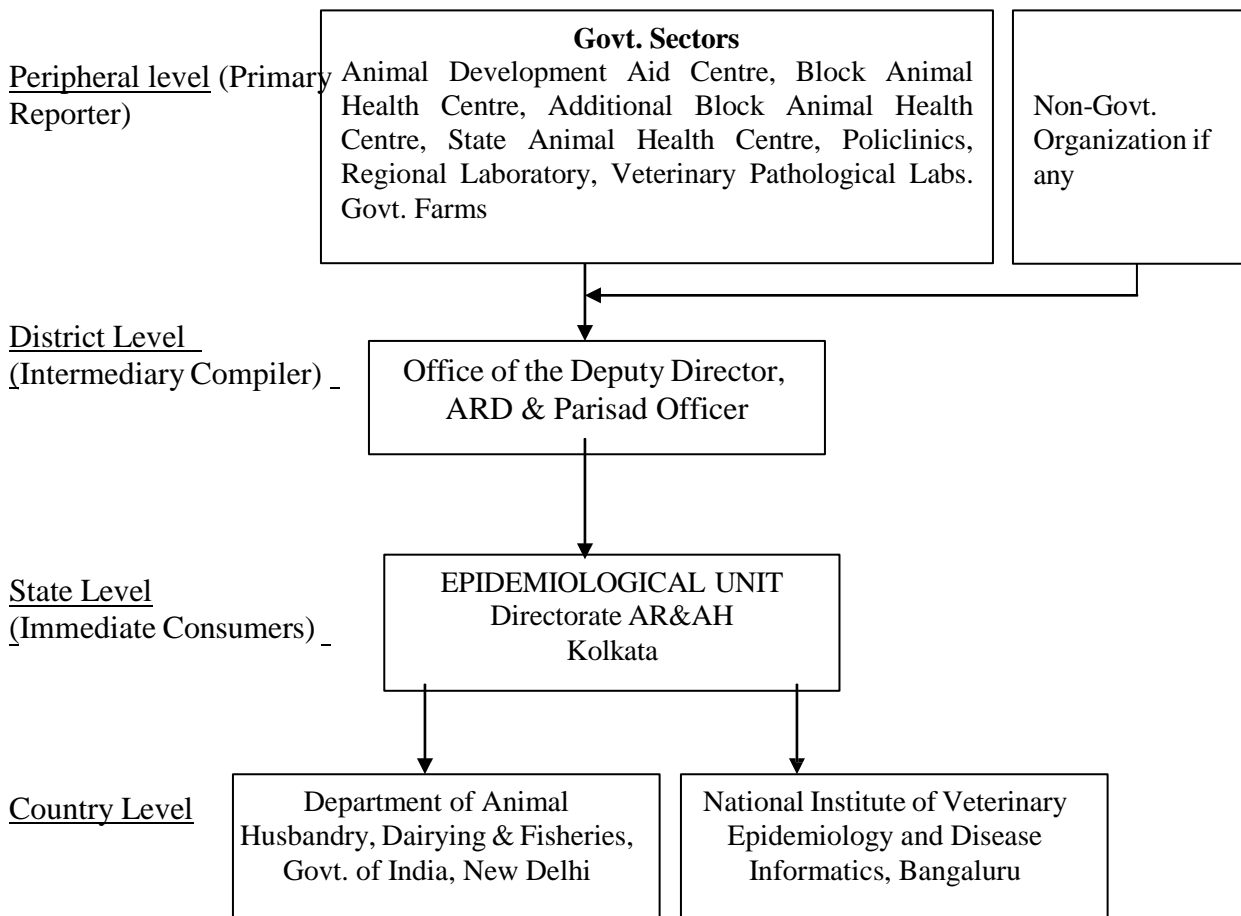
OBJECTIVE OF THE DISEASE SURVEILLANCE SCHEME

Surveillance is an intensive form of data recording. Originally, surveillance was used to describe the tracing and observation of population who were in contact with cases of infectious disease. It is now used in a much wider sense to include all types of diseases - infectious and non-infectious. It is normally a part of control programme for specific diseases.

The disease surveillance system is meant to provide ongoing information of disease in the animal and bird population present in the state and the factors that influence it. This activity necessitates a system for collecting, processing and summarizing data and disseminating information to appropriate agencies as well as individuals. This information is supposed to provide a basis for decisions required to be made by the authorities responsible for formulation and management of disease control programme, which needs to be well designed from both biological and economical points of view.

SOURCES OF SURVEILLANCE DATA

The data are collected for epidemiological study under Animal Disease Surveillance (ADS) Scheme from the existing infrastructure of the Directorate of Animal Resources and Animal Health of the state. For the sake of convenience, the infrastructure has been divided into three tiers viz., a) Primary reporter i.e. at peripheral level of detection of diseases b) Intermediary compiler i.e. at the district level c) Immediate consumers i.e. state level (Epidemiological Unit).



NOTIFIABLE / REPORTABLE DISEASE OF THE STATE

Out of the large number of noticeable disease prevalent in the country, only 47 (forty seven) are being routinely reported by the state to the Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture, Govt. of India. These diseases are listed below and out of which a few are described elaborately with epidemiological analysis as they were prevailed in this state during the year 2023 – 2024.

NOTIFIABLE DISEASES OF GOVT. OF INDIA

Sl. No.	Disease	Sl. No.	Disease
1	Foot & Mouth Disease	25	PRRS
2	Blue Tongue	26	Equine Influenza
3	Anthrax	27	Equine Piroplasmosis
4	Rabies	28	Equid Herpesvirus-1 (EHV-1)
5	Paratuberculosis	29	Glanders
6	Brucellosis	30	Leishmaniosis
7	Crimean Congo Haemorrhagic Fever	31	Camel Pox
8	Japanese Encephalitis	32	Highly Pathogenic Avian Influenza
9	Trypanosomiasis	33	Low Pathogenic Avian Influenza
10	Anaplasmosis	34	Avian Chlamydiosis
11	Babesiosis	35	Avian Infectious Bronchitis
12	Tuberculosis	36	Infectious Laryngotracheitis
13	Haemorrhagic Septicaemia	37	Avian Mycoplasmosis
14	IBR/IPV	38	Duck Viral Hepatitis
15	Theileriosis	39	Duck Viral Enteritis
16	Trichomoniasis	40	Fowl Cholera
17	PPR	41	Fowl Pox
18	Sheep Pox	42	Fowl Typhoid / Pullorum Disease
19	Goat Pox	43	Infectious Bursal Disease
20	Enterotoxaemia	44	Marek's Disease
21	CCPP	45	New Castle Disease/ Ranikhet Disease
22	Enzootic abortion in ewes	46	Black Quarter
23	Classical Swine Fever	47	Lumpy Skin Disease
24	Porcine Cysticercosis		

DISTRICTS UNDER AGRO-CLIMATIC ZONE OF WEST BENGAL

SL No.	Name of the Zone	Districts Name
1.	Hilly	Darjeeling
		Kalimpong
2.	Tarai	Jalpaiguri
		Alipurduar
3.	Laterite	Bankura
		Birbhum
		Purulia
4.	Old Alluvial	Kolkata
		North24Parganas
		Hooghly
		Paschim Bardhaman
		Purba Bardhaman
		Paschim Midnapur
		Jhargram
Howrah		
5.	New Alluvial	Nadia
		Murshidabad
		Malda
		Uttar Dinajpur
		Dakshin Dinajpur
6.	Coastal	CoochBehar
		Purba Midnapur
		South 24Parganas

LIVE STOCK POPULATION IN WEST BENGAL*

(As per 20th Livestock Census, 2019)

CATTLE	190.21 Lakh	16.64 %	BUFFALO	6.30 Lakh	0.55 %
GOAT	162.80 Lakh	14.24 %	SHEEP	9.52 Lakh	0.83 %
PIG	5.40 Lakh	0.47 %	FOWL	641.40 Lakh	56.13 %
DUCK	126.89 Lakh	11.10 %	OTHERS	0.21 Lakh	0.04 %

* Including Poultry

RINDERPEST

In West Bengal, **no outbreak** of Rinderpest has been reported in the year 2023 - 2024. The work of Rinderpest eradication started in the state of West Bengal from the year 1954. Since 1954 with the continuous endeavor of the Rinderpest Eradication Programme of the state neither outbreak nor outbreak of Rinderpest has been reported since 1988, as such the country was awarded with the Provisional Freedom from Rinderpest as per O.I.E. standard since April 1994. Under the strict guideline of the Central Management unit (C.P.M.U.) and as per O.I.E. pathway, the state has been completed all the working procedure of Rinderpest Eradication Programme. Vaccination against Rinderpest has been completely suspended in West Bengal since April 1995. Even after keeping the vaccination work suspended for consecutive five years, not a single case of Rinderpest could be detected during the period. This is probably due to absence of the causative organism in West Bengal. Now India has been recognized as free from Rinderpest infection by the International Committee of OIE on 25.06.2006.

In this year, Village Search and Stock Route Search were conducted as was done in the previous years in the state of West Bengal under the programme designated as **NATIONAL PROGRAMME OF RINDERPEST ERADICATION (N.P.R.E.)**.

T A B L E – I

VILLAGE SEARCH REPORT FOR THE STATE WEST BENGAL

YEAR	VILLAGE SEARCH TARGET	VILLAGE SEARCH ACHIEVED	PERCENTAGE ACHIEVED	OUTCOME OF SEARCH
2019-20	37966	28827	75.93 %	NEGATIVE TO RP
2020-21	37966	26510	69.82 %	NEGATIVE TO RP
2021-22	37969	24394	66.83 %	NEGATIVE TO RP
2022-23	37969	24161	63.63 %	NEGATIVE TO RP
2023-24	36494	22843	62.59%	NEGATIVE TO RP

T A B L E – II

DAY BOOK INSPECTION FOR THE STATE WEST BENGAL

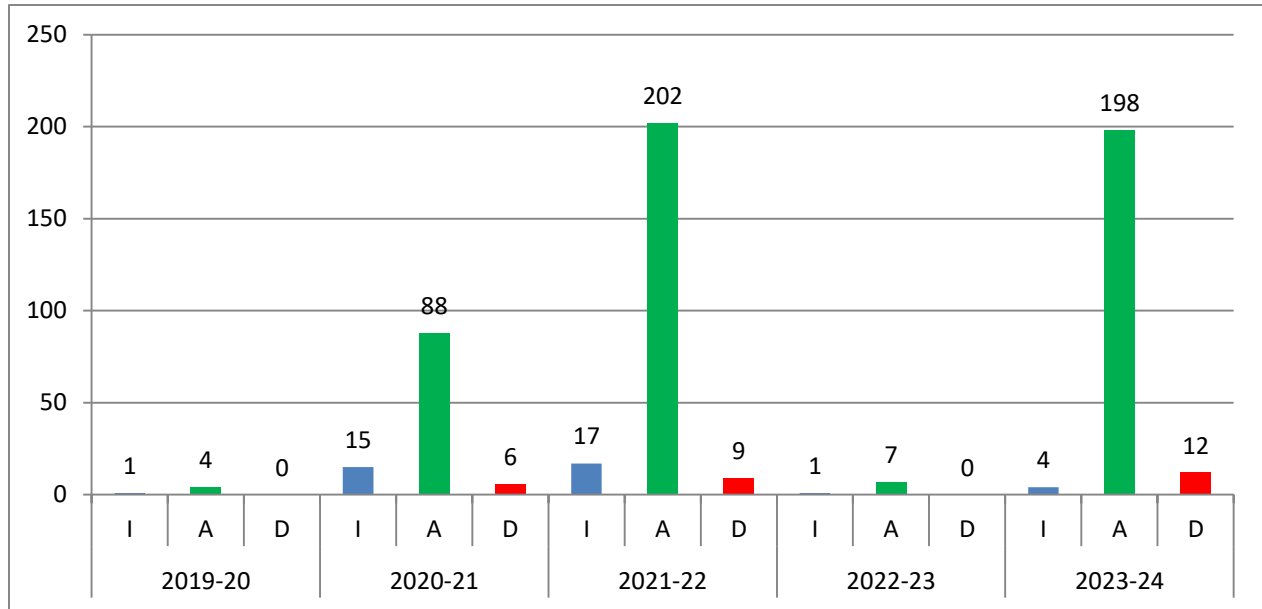
STATE	DAY BOOK INSPECTION TARGET	DAY BOOK INSPECTION ACHIEVED	PERCENTAGE ACHIEVED	WHETHER ANY SYMPTOMS SUSPECTED FOR RP
2019-20	16375	12987	79.31 %	NIL
2020-21	16375	11759	71.81%	NIL
2021-22	14375	10613	73.82%	NIL
2022-23	16270	11895	73.11 %	NIL
2023-24	16082	12970	80.64%	NIL

FOOT & MOUTH DISEASE

Foot and mouth disease (FMD) is a severe, highly contagious viral disease of livestock that has a significant economic impact. The disease affects cattle, swine, sheep, goats and other cloven-hoofed ruminants. It is a Transboundary Animal Disease (TAD) that deeply affects the production of livestock and disrupting regional and international trade in animals and animal products. FMD is caused by an Aphthovirus of the family Picornaviridae, seven strains (A, O, C, SAT1, SAT2, SAT3, and Asia1) are endemic in different countries worldwide. Each strain requires a specific vaccine to provide immunity to a vaccinated animal. In India prevalent strains or types are “O”, A”, “Asia –I”. Among these, type “O” has been most common and widespread followed by “A” and “Asia-I”. The first signs of illness usually appear within 2 to 14 days after infection. FMD cannot be differentiated clinically from other vesicular diseases, such as swine vesicular disease, vesicular stomatitis and vesicular exanthema. Laboratory diagnosis of any suspected FMD case is therefore a matter of urgency. Typical cases of FMD are characterised by a vesicular condition of the feet, buccal mucosa and, in females, the mammary glands. Clinical signs can vary from mild to severe, and fatalities may occur, especially in young animals. Although most infected animals survive, they're left weak and unable to produce the level of meat and milk prior to infection. In some species the infection may be subclinical, e.g. African buffalo. The preferred tissue for diagnosis is epithelium from unruptured or freshly ruptured vesicles or vesicular fluid. Where collecting this is not possible, blood and/or oesophageal–pharyngeal fluid samples taken by probang cup in ruminants or throat swabs from pigs provide an alternative source of virus. Myocardial tissue or blood can be submitted from fatal cases, but vesicles are again preferable if present. It is vital that samples from suspected cases be transported under secure conditions to authorised laboratories. FMD is one of the most challenging animal diseases to control. Although most infected animals survive, they're left weak and unable to produce the level of meat and milk prior to infection. Its prevention is based on the presence of early detection and warning systems and the implementation of effective surveillance among other measures. FMD is the first disease for which WOAHP established an official list of disease-free countries which can be officially recognized as free of the disease either in their entirety or in defined zones and compartments.

TABLE – I
EPIDEMIOLOGICAL OBSERVATION ON FOOT & MOUTH DISEASE

Year	No. of Outbreak	Population At Risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
2019-2020	1	200	4	0	0.00	2.00	0.00
2020-2021	15	1703	88	6	6.82	5.17	0.35
2021-2022	17	19180	202	9	4.46	1.05	0.05
2022-2023	1	100	7	0	0	7.00	0.00
2023-24	4	2360	198	12	6.06	8.39	0.51



■ Outbreak
 ■ Affected
 ■ Death

Year-wise Outbreak, Affected and Death due to FMD in West Bengal in last 5 years

There were only **4(four)** outbreaks of FMD reported in the year 2023-2024 all over the state which is more than the previous year 2022-23 (1 outbreak reported). The outbreaks were reported in June, July and August. The overall morbidity rate was 8.39% with only 0.51% mortality. It is necessary to improve the surveillance programme to find out more outbreaks reports in the districts.

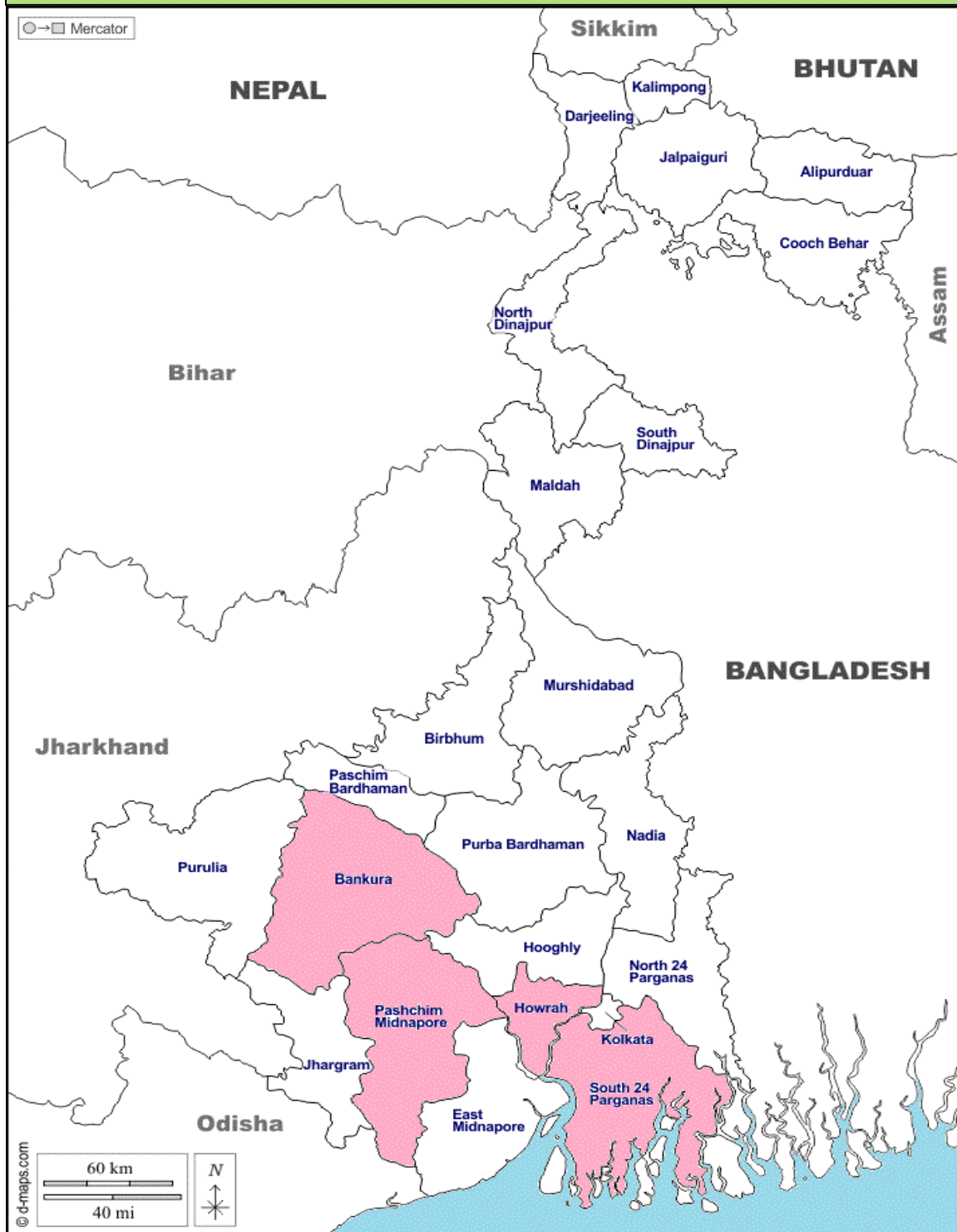
T A B L E – II
DISTRICT WISE FMD OUTBREAKS REPORTED IN WEST BENGAL FOR THE YEAR
2023-2024

District	No. of outbreak	Population at risk	Affected	Death	C.F.R (%)	Morbidity (%)	Mortality (%)
Howrah	1	160	49	10	20.41	30.63	6.25
Paschim Medinipur	1	60	28	1	3.57	46.67	1.67
South 24 Pgs	1	90	16	1	6.25	17.78	1.11
Bankura	1	2050	105	0	0	5.12	0
TOTAL	4	2360	198	12	6.06	8.39	0.51

T A B L E - III
MONTHWISE FOOT & MOUTH DISEASE OUTBREAK REPORTED IN WEST BENGAL
FOR THE YEAR 2023 – 2024

Month	No. of outbreak	Population at risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
April	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0
June	1	160	49	10	20.41	30.63	6.25
July	1	60	28	1	3.57	46.67	1.67
August	1	90	16	1	6.25	17.78	1.11
September	0	0	0	0	0	0	0
October	1	2050	105	0	0	5.12	0
November	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0
TOTAL	4	2360	198	12	6.06	8.39	0.51

District-wise outbreak of FMD in West Bengal in 2023-24



FMD Outbreak

One (1)

TABLE – IV
DISTRICT WISE FOOT & MOUTH DISEASE OUTBREAKS REPORTED IN WEST
BENGAL DURING LAST TEN YEARS

DISTRICT	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Coochbehar	0	0	0	0	0	0	0	0	0	0
Alipurduar	0	0	0	0	0	0	0	0	0	0
Jalpaiguri	3	0	0	0	2	0	0	0	0	0
Darjeeling	1	0	0	0	1	0	0	2	0	0
Kalimpong	0	0	0	0	0	0	0	0	0	0
Uttar Dinajpur	0	0	0	0	2	0	0	0	0	0
Dakshin Dinajpur	0	2	0	0	0	0	0	0	0	0
Malda	0	0	0	0	0	0	0	1	0	0
Murshidabad	0	1	0	0	0	0	1	0	0	0
Nadia	0	1	2	0	5	0	2	0	0	0
North 24 Pgs.	0	1	1	0	4	0	0	0	0	0
South 24 Pgs.	1	1	0	0	4	0	1	2	0	1
Kolkata	0	0	0	0	1	0	0	0	0	0
Howrah	1	0	0	0	9	0	0	6	0	1
Hooghly	0	1	1	0	6	0	2	0	0	0
Purba Bardhaman	0	1	0	0	5	0	4	0	0	0
Paschim Bardhaman	0	0	0	0	0	0	0	0	0	0
Birbhum	0	4	0	0	0	0	0	1	1	0
Bankura	3	0	0	0	2	0	0	0	0	1
Purba Midnapur	0	1	0	0	2	0	5	0	0	0
PaschimMidnapur	0	8	1	1	12	1	1	5	0	1
Purulia	0	10	0	0	0	0	0	0	0	0
Jhargram	0	0	0	0	0	0	0	0	0	0
Purulia	0	0	0	0	0	0	0	0	0	0
TOTAL	9	31	5	0	62	01	15	17	1	4

RABIES

Rabies is caused by neurotropic viruses of the genus Lyssavirus in the family Rhabdoviridae and is transmissible to all mammals. Rabies is a vaccine-preventable, zoonotic, viral disease affecting the central nervous system. Rabies infects mammals, including dogs, cats, livestock and wildlife. The incubation period for rabies is typically 2–3 months but may vary from one week to one year, depending on factors such as the location of virus entry and the viral load. As the virus moves to the central nervous system, progressive and fatal inflammation of the brain and spinal cord develops. Vaccinating dogs, including puppies, through mass dog vaccination programs is the most cost-effective strategy for preventing rabies.

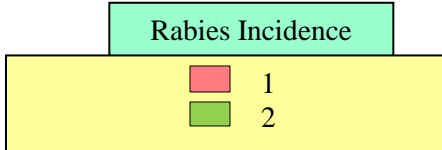
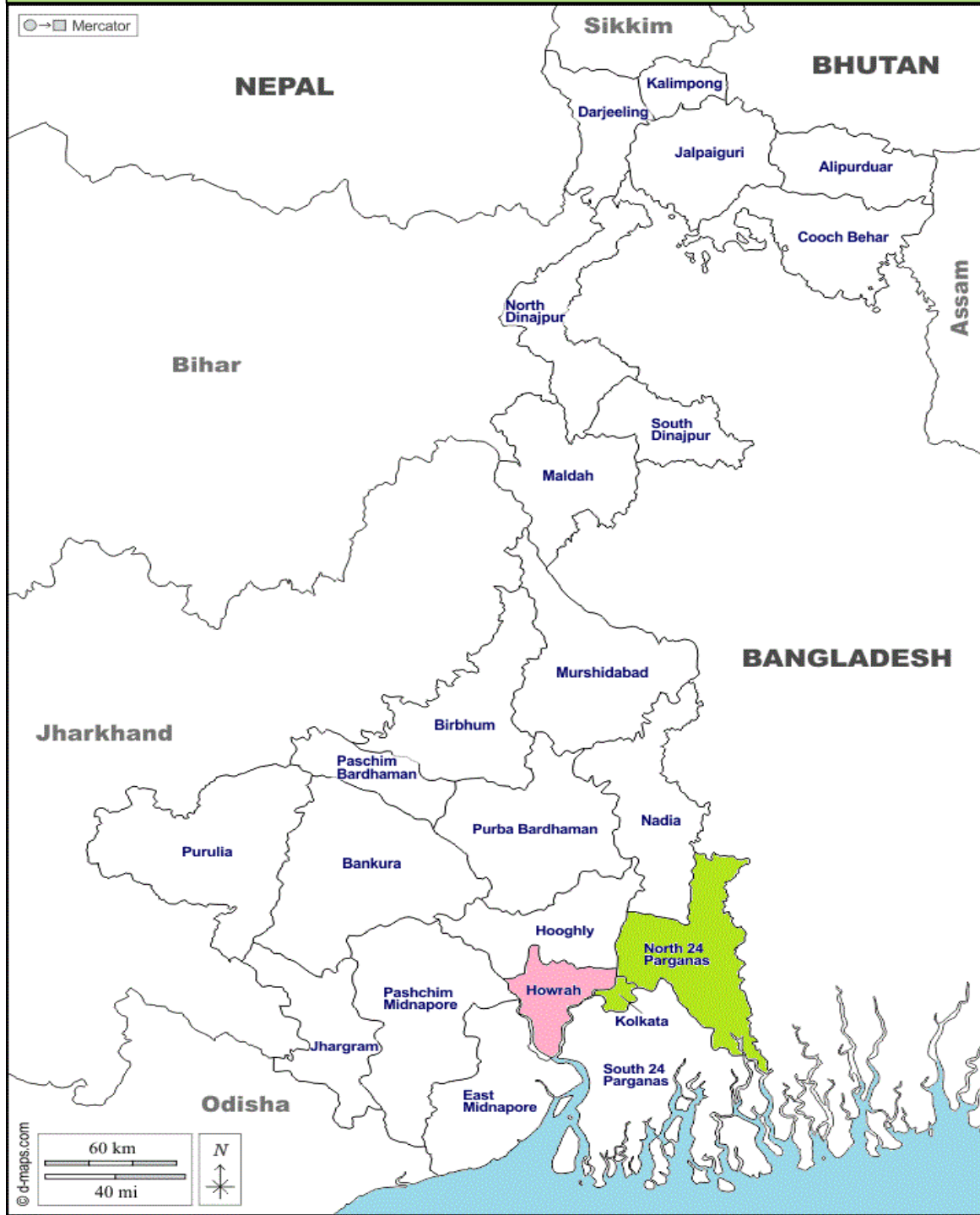
T A B L E – I

EPIDEMIOLOGICAL OBSERVATION ON RABIES IN WEST BENGAL

Year	No. of incidences	Population at Risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
2019-2020	3	300	3	3	100.00	1.00	1.00
2020-2021	3	350	3	3	100.00	0.86	0.86
2021-2022	0	0	0	0	0.00	0.00	0.00
2022-2023	3	12	3	3	100.00	25.00	25.00
2023-2024	5	37	5	5	100.00	13.51	13.51

In the year 2023-2024, five (5) incidences of animal Rabies cases were reported in West Bengal with two incidences each from North 24 Parganas and Kolkata; one incidence was reported from Howrah district.

District-wise incidence of Rabies in West Bengal in 2023-24

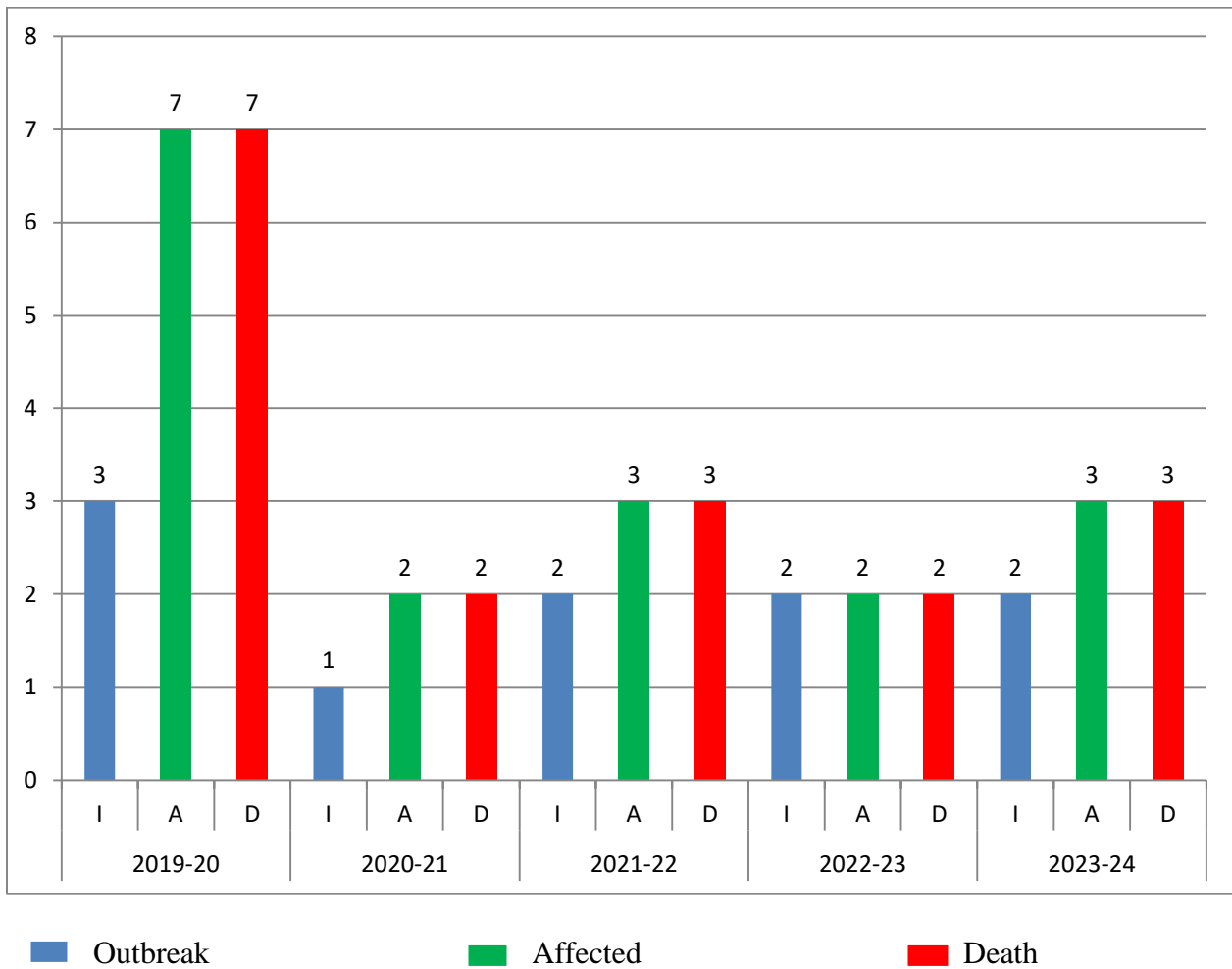


ANTHRAX

Anthrax is a noncontagious zoonotic disease caused by the spore-forming, gram-positive, rod-shaped bacterium *Bacillus anthracis*. Anthrax is most common in wild and domestic herbivores (eg, cattle, sheep, goats, camels, and antelopes) but can also be seen in humans exposed to tissue from infected animals, to contaminated animal products, or under certain conditions, directly to *B anthracis* spores. Fowls are resistant to Anthrax Depending on the route of infection, host factors, and potentially strain-specific factors, anthrax can have different clinical manifestations. In herbivores, anthrax commonly causes acute septicemia with a high fatality rate, often accompanied by hemorrhagic lymphadenitis. In dogs, humans, horses, and pigs, disease is usually less acute but still potentially fatal. Spores of *B anthracis* can remain viable in soil for many years. During this time, they are a potential source of infection for grazing animals; however, they generally do not represent a direct risk of infection for people. Grazing animals may become infected when they ingest sufficient quantities of spores. The disease is mediated mainly by exotoxins. Per-acute, acute, sub-acute and, rarely, chronic forms of the disease are reported. Ante-mortem clinical signs may be virtually absent in per-acute and acute forms of the disease. Sub-acute disease may be accompanied by progressive fever, depression, inappetence, weakness, prostration and death. Acute, sub-acute, and chronic disease may show localised swelling and fever. In chronic disease, the only sign may be enlarged lymph glands. To avoid environmental contamination, post-mortem examinations of carcasses of animals suspected to have died of anthrax are discouraged. Lesions most commonly seen are those of a generalised septicaemia often accompanied by an enlarged spleen having a ‘blackberry jam’ consistency and poorly clotted blood. Haemorrhage from the nose, mouth, vagina and/or anus at death may be found. Anthrax is a preventable disease by vaccines and can be treated with antibiotics, however specific control procedures for carcasses disposal are necessary to contain the disease and prevent its spread.

T A B L E – I
EPIDEMIOLOGICAL OBSERVATION ON ANTHRAX

Year	No. of outbreak	Population at Risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
2019-2020	03	2599	7	7	100.00	0.27	0.27
2020-2021	01	300	02	02	100.00	0.67	0.67
2021-2022	02	507	03	03	100.00	0.59	0.59
2022-2023	02	5	2	2	100.00	40.00	40.00
2023-24	02	455	3	3	100.00	0.66	0.66



Year-wise Outbreak, Affected and Death due to Anthrax in West Bengal in last 5 years

In the reporting year 2023-24, number of two (02) outbreaks were reported which is similar to the previous year 2022-23. In the current year, outbreaks were reported from Murshidabad (New Alluvial zone). During last ten years the outbreaks were reported from Murshidabad district. To prevent the disease effectively, vaccination should be completed before monsoon in endemic zones. It is necessary to improve the surveillance programme to find out outbreaks of Anthrax in other districts, if any.

T A B L E – II**DISTRICTWISE ANTHRAX REPORTED IN WEST BENGAL FOR THE YEAR 2023- 2024**

District	No. of outbreak	Population at risk	Affected	Death	C.F.R (%)	Morbidity (%)	Mortality (%)
Murshidabad	2	455	3	3	100.00	0.66	0.66
TOTAL	2	455	3	3	100.00	0.66	0.66

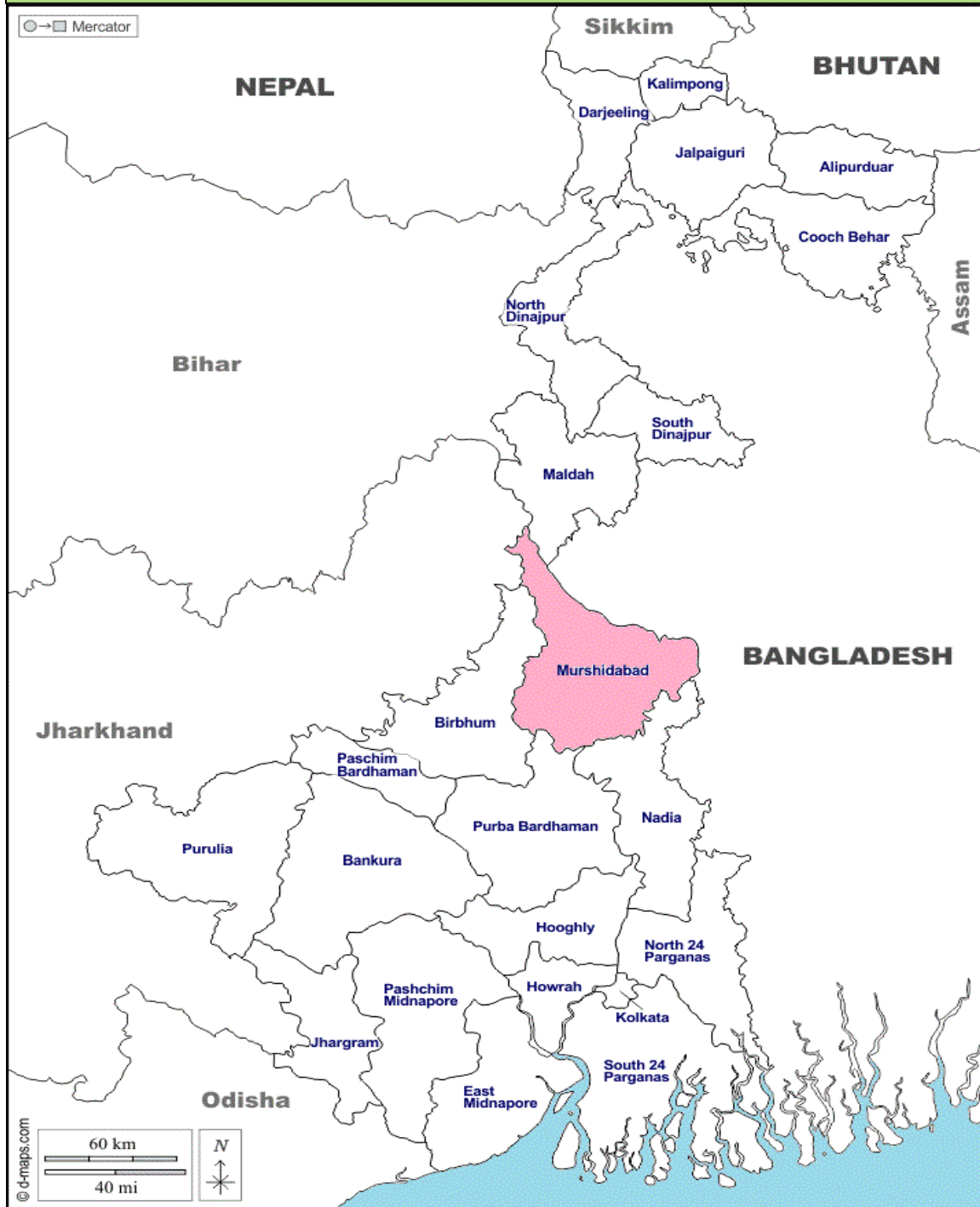
T A B L E – III**MONTHWISE ANTHRAX OUTBREAK REPORTED IN WEST BENGAL FOR THE YEAR 2023 – 2024**

Month	No. of outbreak	Population at risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
April	0	0	0	0	0.00	0.00	0.00
May	0	0	0	0	0.00	0.00	0.00
June	1	20	1	1	100.00	5.00	5.00
July	0	0	0	0	0.00	0.00	0.00
August	0	0	0	0	0.00	0.00	0.00
September	0	0	0	0	0.00	0.00	0.00
October	0	0	0	0	0.00	0.00	0.00
November	0	0	0	0	0.00	0.00	0.00
December	0	0	0	0	0.00	0.00	0.00
January	0	0	0	0	0.00	0.00	0.00
February	0	0	0	0	0.00	0.00	0.00
March	1	435	2	2	100.00	0.00	0.00
TOTAL	2	455	3	3	100.00	0.66	0.66

T A B L E – I V
DISTRICT WISE ANTHRAX OUTBREAK REPORTED IN WESTS BENGAL DURING
LAST TEN YEARS

District	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Cooch Behar	0	0	0	0	0	0	0	1	0	0
Jalpaiguri	0	0	0	0	0	0	0	0	0	0
Alipurduar	0	0	0	0	0	0	0	0	0	0
Darjeeling	0	0	0	0	0	0	0	0	0	0
Kalimpong	0	0	0	0	0	0	0	0	0	0
Uttar Dinajpur	0	0	0	0	0	0	0	0	0	0
Dakshin Dinajpur	0	0	0	0	0	0	0	0	0	0
Malda	0	0	0	0	0	0	0	0	0	0
Murshidabad	21	0	8	1	4	1	1	1	2	2
Nadia	0	1	6	1	0	0	0	0	0	0
North 24Parganas	0	0	0	0	0	0	0	0	0	0
South 24Parganas	0	0	0	0	0	0	0	0	0	0
Kolkata	0	0	0	0	0	0	0	0	0	0
Howrah	0	0	0	0	0	0	0	0	0	0
Hooghly	0	1	0	0	1	2	0	0	0	0
Purba Bardhaman	0	0	0	0	0	0	0	0	0	0
Paschim Bardhaman	0	0	0	0	0	0	0	0	0	0
Birbhum	0	0	1	0	0	0	0	0	0	0
Bankura	2	0	0	0	0	0	0	0	0	0
Purba Midnapur	0	0	1	0	0	0	0	0	0	0
Paschim Midnapur	0	1	0	0	0	0	0	0	0	0
Purulia	0	0	0	0	0	0	0	0	0	0
Jhargram	0	0	0	0	0	0	0	0	0	0
TOTAL	23	3	16	2	5	3	1	2	2	2

District-wise outbreak of Anthrax in West Bengal in 2023-24

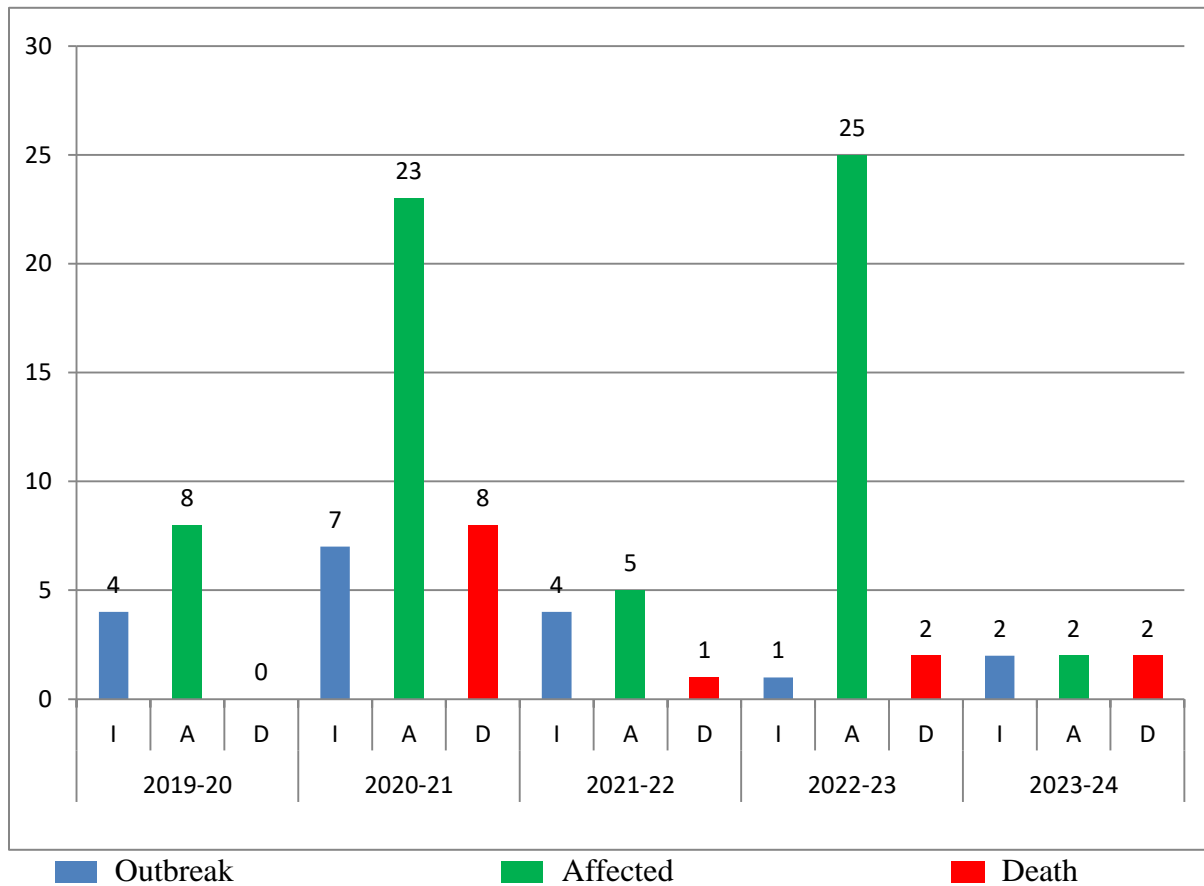


HAEMORRHAGIC SEPTICAEMIA

Hemorrhagic septicemia (HS) is an acute, highly fatal form of Pasteurellosis that affects mainly water buffalo, cattle, and bison. It is a World Organization for Animal Health (OIE)–listed animal disease and is considered the most economically important bacterial disease of water buffalo and cattle in tropical areas of Asia, particularly in India and other parts of southeast Asia where water buffalo populations are high. Disease is most devastating to smallholder farmers where husbandry and preventive practices are poor and free-range management is common. Classical hemorrhagic septicemia as defined by the OIE is caused by *Pasteurella multocida* serotypes B:2 and E:2 (Carter and Heddleston classification system), which correspond to serotypes 6:B and 6:E of the Namioka-Carter classification system. Serotype B:2 has been identified in most areas where the disease is endemic, whereas serotype E:2 has been found only in Africa. Septicemic pasteurellosis that is clinically similar to HS is caused by a wide variety of other *P. multocida* serotypes. Most cases in cattle and buffalo are acute or peracute. Buffaloes are generally more susceptible to HS than cattle and show more severe forms of disease with profound clinical signs. Antibiotics are effective only if they are started very soon after the onset of clinical signs. Vaccination is routinely practiced in endemic areas. Avoiding crowding, especially during wet conditions, will also reduce the incidence of disease.

T A B L E – I
EPIDEMIOLOGICAL OBSERVATION ON HEAMORRHAGIC SEPTICAEMIA

Year	No. of outbreak	Population at Risk	Affected	Death	C.F.R . (%)	Morbidity (%)	Mortality (%)
2019-20	4	1000	08	00	0.00	0.80	0.00
2020-21	7	1812	23	08	34.78	1.27	0.44
2021-22	4	888	05	01	20.00	0.56	0.11
2022-23	1	35	25	2	8.00	71.43	5.71
2023-24	2	30	2	2	100.00	6.67	6.67



Year-wise Outbreak, Affected and Death due to HS in West Bengal in last 5 years

In the year 2023-2024, two (02) outbreaks were reported which is more than the previous year (01). Case fatality rate was 100%. Both the outbreaks were reported from North 24 Parganas. It is necessary to improve the surveillance programme to find out more disease outbreaks in the districts.

T A B L E – II
DISTRICTWISE HAEMORRHAGIC SEPTICAEMIA OUTBREAK REPORTED IN
WEST BENGAL FOR THE YEAR 2022-2024

District	No. of outbreak	Population at risk	Affected	Death	C.F.R (%)	Morbidity (%)	Mortality (%)
North 24 Pgs.	2	30	2	2	100.00	6.67	6.67
TOTAL	2	30	2	2	100.00	6.67	6.67

T A B L E – III
MONTHWISE HAEMORRHAGIC SEPTICAEMIA OUTBREAK REPORTED IN WEST
BENGAL FOR THE YEAR 2022-2024

Month	No. of outbreak	Population at risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
April	0	0	0	0	0.00	0.00	0.00
May	0	0	0	0	0.00	0.00	0.00
June	0	0	0	0	0.00	0.00	0.00
July	0	0	0	0	0.00	0.00	0.00
August	1	10	1	1	100.00	10.00	10.00
September	0	0	0	0	0.00	0.00	0.00
October	0	0	0	0	0.00	0.00	0.00
November	0	0	0	0	0.00	0.00	0.00
December	0	0	0	0	0.00	0.00	0.00
January	0	0	0	0	0.00	0.00	0.00
February	0	0	0	0	0.00	0.00	0.00
March	1	20	1	1	100.00	5.00	5.00
TOTAL	2	30	2	2	100.00	6.67	6.67

District-wise outbreak of HS in West Bengal in 2023-24

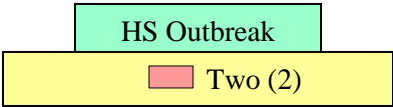
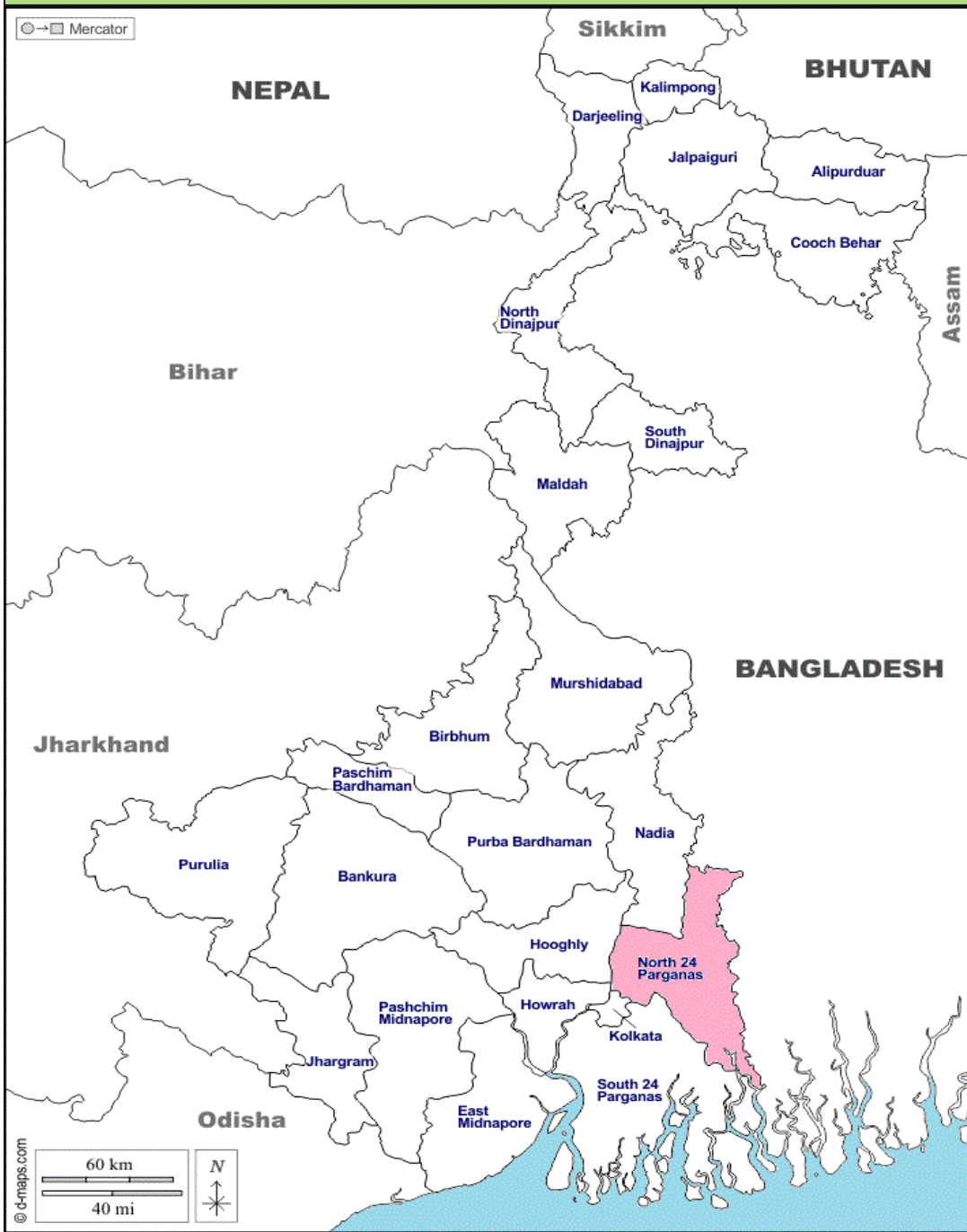
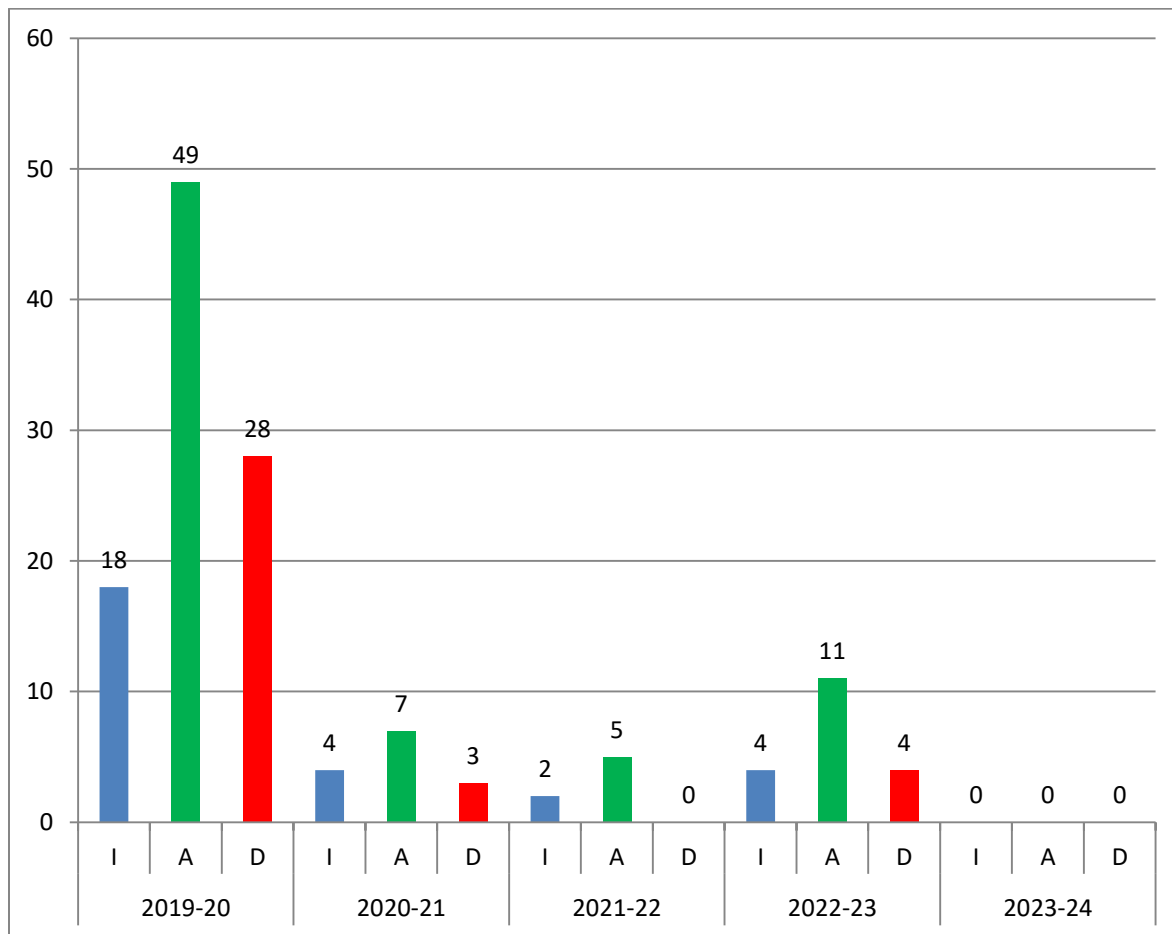


TABLE-IV
DISTRICT WISE HAEMORRHAGIC SEPTICAEMIA OUTBREAKS REPORTED IN WEST BENGAL DURING LAST TEN YEARS

District	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Coochbehar	0	0	1	0	0	0	0	0	0	0
Jalpaiguri	0	0	0	0	0	0	0	0	0	0
Alipurduar	0	0	0	0	0	0	0	0	0	0
Darjeeling	0	0	0	1	0	0	0	0	0	0
Uttar Dinajpur	1	0	0	0	0	0	1	0	0	0
Dakshin Dinajpur	0	0	0	0	0	0	0	0	0	0
Malda	0	0	0	1	0	0	0	0	0	0
Murshidabad	0	0	1	0	1	0	0	0	0	0
Nadia	0	1	0	1	3	0	0	0	0	0
North 24 Pgs.	0	0	4	1	2	0	0	0	0	2
South 24 Pgs.	0	0	0	0	0	0	2	0	0	0
Kolkata	0	0	0	0	0	0	0	1	0	0
Howrah	0	1	0	2	2	0	0	0	0	0
Hooghly	2	0	1	0	1	1	1	0	0	0
Purba Bardhaman	1	1	5	1	0	3	1	0	0	0
Paschim Bardhaman	0	0	0	0	0	0	0	0	0	0
Birbhum	1	0	1	0	0	0	0	0	1	0
Bankura	23	4	0	0	0	0	1	3	0	0
Purba Midnapur	0	0	0	0	0	0	1	0	0	0
Paschim Midnapur	0	0	2	0	0	0	0	0	0	0
Purulia	4	0	1	0	0	0	0	0	0	0
Jhargram	0	0	0	0	0	0	0	0	0	0
TOTAL	32	7	16	7	9	4	7	4	1	2



■ Outbreak

■ Affected

■ Death

Year-wise Outbreak, Affected and Death due to BQ in West Bengal in last 5 years

There is no outbreak of Black Quarter recorded in West Bengal in 2023-24. It is necessary to improve the surveillance programme to justify the absence of disease in the districts.

TABLE-II
DISTRICT WISE BLACK QUARTER OUTBREAKS REPORTED IN WEST BENGAL
DURING LAST TEN YEARS

District	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2020-21	2022-23	2023-24
Coochbehar	1	0	0	0	0	0	0	0	0	0
Jalpaiguri	0	0	0	0	0	0	0	0	0	0
Kalimpong	0	0	0	0	0	0	0	0	0	0
Alipurduar	0	0	0	0	0	0	0	0	0	0
Darjeeling	0	0	0	0	0	0	0	0	0	0
Uttar Dinajpur	4	0	0	0	0	0	0	0	1	0
Dakshin Dinajpur	10	5	1	0	0	0	0	0	0	0
Malda	0	0	0	0	1	0	0	0	0	0
Murshidabad	0	0	0	0	0	0	0	0	0	0
Nadia	0	2	0	0	0	2	0	0	0	0
North 24 Parganas	0	0	0	0	1	0	0	0	0	0
South 24 Parganas	0	0	0	1	3	0	0	0	1	0
Kolkata	0	0	0	0	0	0	0	0	0	0
Howrah	6	0	0	1	1	1	0	0	0	0
Hooghly	0	0	0	0	0	1	1	0	0	0
Purba Bardhaman	3	8	4	0	0	9	2	0	0	0
Paschim Bardhaman	0	0	0	0	0	1	0	0	0	0
Birbhum	3	0	0	3	0	4	0	0	1	0
Bankura	1	2	1	0	0	0	0	0	1	0
Purba Midnapur	0	5	4	3	0	0	1	2	0	0
Paschim Midnapur	0	1	1	0	0	0	0	0	0	0
Purulia	1	0	0	0	0	0	0	0	0	0
Jhargram	0	0	0	0	0	0	0	0	0	0
TOTAL	29	23	11	8	6	18	4	2	4	0

ANAPLASMOSIS

Bovine anaplasmosis is a rickettsial disease transmitted by one host cattle tick, *Rhipicephalus (Boophilus) microplus* and also by blood sucking flies e.g. *Tabanus* and *Stomoxys* flies. Outbreaks of bovine anaplasmosis are due to infection with *Anaplasma marginale*. *Anaplasma centrale* is capable of producing a moderate degree of anaemia, but clinical outbreaks in the field are extremely rare. Clinical signs of anaplasmosis are fever (early stage but subnormal temp. at later stage), severe anaemia, jaundice, reduced milk yield, emaciation, panting and exhaustion.

In the year 2023-2024, two hundred and twenty six (226) incidences were recorded in West Bengal which is less in comparison to previous year (266). No death was recorded due to Anaplasmosis in this year .Highest incidences were recorded in Purba Bardhaman (123) district.

TABLE – I
MONTHWISE OUTBREAK OF ANAPLASMOSIS REPORTED IN WEST BENGAL FOR THE
YEAR 2023-2024

Month	No of Outbreak	Population at risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
April	8	115	10	0	0.00	8.7	0.00
May	10	130	17	0	0.00	13.1	0.00
June	14	131	18	0	0.00	13.7	0.00
July	17	213	31	0	0.00	14.6	0.00
August	23	226	35	0	0.00	15.5	0.00
September	25	287	44	0	0.00	15.3	0.00
October	31	150	52	0	0.00	34.7	0.00
November	29	170	45	0	0.00	26.5	0.00
December	27	149	46	0	0.00	30.9	0.00
January	16	464	16	0	0.00	3.4	0.00
February	5	10	10	0	0.00	100.0	0.00
March	21	26516	36	0	0.00	0.1	0.00
TOTAL	226	28561	360	0	0.00	1.26	0.00

TABLE – II**DISTRICTWISE OUTBREAK OF ANAPLASMOSIS REPORTED IN WEST BENGAL FOR THE YEAR 2023-2024**

District	No. of Outbreak	Population at risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
Bankura	7	2372	12	0	0	0.5	0.00
Birbhum	3	328	3	0	0	0.9	0.00
Hooghly	62	11565	101	0	0	0.8	0.00
Howrah	3	40	5	0	0	12.5	0.00
Malda	2	110	5	0	0	4.5	0.00
Nadia	2	8	2	0	0	25.0	0.00
North 24 Pgs	2	10	2	0	0	20.0	0.00
Purba Bardhaman	123	14000	194	0	0	1.4	0.00
South 24 Pgs	21	126	35	0	0	27.8	0.00
Kalimpong	1	2	1	0	0	50.0	0.00
Total	226	28,561	360	0	0	1.26	0.00

THEILERIOSIS

Bovine tropical Theileriosis is a blood protozoan disease of cattle and buffalo caused by *Theileria annulata* transmitted by *Hyalomma anatolicum anatolicum*. Exotic and cross-bred cattle, young indigenous calves are more susceptible and indigenous cattle remain as a carrier. The disease occurs particularly in summer and rainy season (May to October). The pleomorphic erythrocytic forms (0.5-1.5 µm)-80% round or annular/rest-oval, rod shaped, comma shaped. Recovery from infection leads to the development of premunity and the animals act as carrier. The disease is manifested by high fever (105° – 107 °F), enlargement of superficial lymph nodes and face, increase respiratory and heart rates, nasal discharge and lachrymation, laboured breathing, coughing, haemoglobinuria (rare), nervous signs due to cerebral form of Theileriosis and urticarial type of skin lesions.

During the reporting year 2023-24, total two hundred ninety eight (298) incidences of Theileriosis were reported in West Bengal which is much less than the previous year (372 incidences). No death was recorded due to Anaplasmosis in this year .Highest incidences were recorded in Purba Bardhaman (116) district.

TABLE – I
MONTHWISE OUTBREAK OF THEILERIASIS REPORTED IN WEST BENGAL FOR
THE YEAR 2023-2024

Month	No of Outbreak	Population at risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
April	17	539	26	0	0.00	4.82	0.00
May	22	482	29	0	0.00	6.02	0.00
June	24	890	43	0	0.00	4.83	0.00
July	30	883	57	1	1.75	6.45	0.11
August	33	494	56	1	1.78	11.33	0.20
September	25	243	42	0	0.00	17.28	0.00
October	27	171	47	1	2.12	27.48	0.58
November	32	167	66	0	0.00	39.52	0.00
December	16	419	25	0	0.00	5.96	0.00
January	17	646	27	0	0.00	4.18	0.00
February	25	1345	79	0	0.00	5.87	0.00
March	30	30825	99	0	0.00	0.32	0.00
Total	298	37104	596	3	0.50	1.60	0.01

TABLE-II
DISTRICTWISE OUTBREAK OF THEILERIASIS REPORTED IN WEST BENGAL FOR
THE YEAR 2023-2024

District	No. of Outbreak	Population at risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
Bankura	29	3039	37	0	0	1.22	0
Birbhum	6	858	7	0	0	0.82	0
Hooghly	88	12878	232	0	0	1.80	0
Howrah	11	156	23	0	0	14.74	0
Kolkata	4	22	6	1	16.67	27.27	4.55
Malda	1	10	6	0	0	60.00	0
Nadia	6	202	9	0	0	4.46	0
North 24 Pgs	9	148	31	0	0	20.95	0
Pasch Bardhaman	2	10	2	0	0	20.00	0
Uttar Dinajpur	1	1	1	1	100.00	100.00	100.00
Purba Bardhaman	116	19569	198	0	0	1.01	0
Purba Midnapur	2	15	2	0	0	13.33	0
South 24 Pgs	23	196	42	1	2.38	21.43	0.51
Total	298	37104	596	3	0.50	1.61	0.01

BABESIOSIS

Bovine babesiosis is caused by protozoan parasites of the genus *Babesia*, order Piroplasmida, phylum Apicomplexa. Of the species affecting cattle, two – *Babesia bovis* and *B. bigemina* are widely distributed and of major importance in Africa, Asia, Australia, and Central and South America. Tick species are the vectors of *Babesia*. *Rhipicephalus (Boophilus) microplus* is the principal vector of *B. bigemina* and *B. bovis* and is widespread in the tropics and subtropics. *B. bovis* is generally more pathogenic than *B. bigemina*. The infections are characterised by high fever (105°-107° F), ataxia, anorexia, general circulatory shock, initially profuse diarrhoea followed by marked constipation and sometimes also nervous signs as a result of sequestration of infected erythrocytes in cerebral capillaries. Anaemia and haemoglobinuria (coffee coloured urine) may appear later in the course of the disease. An inverse age susceptibility occurs in Babesiosis. Infected animals develop a life-long immunity against re-infection with the same species.

In the year 2023 – 2024, One hundred two (102) incidences of Babesiosis outbreaks were reported from seven districts of West Bengal which is less than the previous year (197 incidences). No death was recorded due to Babesiosis in this year. Highest incidences were recorded in North 24 Parganas (48) district.

TABLE – I
MONTHWISE OUTBREAK OF BABESIOSIS REPORTED IN WEST BENGAL FOR THE
YEAR 2023-2024

Month	No of Outbreak	Population at risk	Affected	Death	C.F.R (%)	Morbidity (%)	Mortality (%)
April	14	201	43	0	0.00	21.39	0.00
May	10	217	51	0	0.00	23.50	0.00
June	11	178	46	0	0.00	25.84	0.00
July	13	93	54	0	0.00	58.06	0.00
August	10	174	95	1	1.05	54.60	0.57
September	8	199	65	0	0.00	32.66	0.00
October	5	124	48	0	0.00	38.71	0.00
November	4	95	35	0	0.00	36.84	0.00
December	8	274	28	0	0.00	10.22	0.00
January	4	109	48	0	0.00	44.03	0.00
February	6	90	27	0	0.00	30.00	0.00
March	9	48	34	0	0.00	70.83	0.00
Total	102	1802	567	1	0.18	31.47	0.06

TABLE – II
DISTRICTWISE OUTBREAK OF BABESIOSIS REPORTED IN WEST BENGAL FOR THE
YEAR 2023-2024

District	No. of Outbreak	Population at risk	Affected	Death	C.F.R (%)	Morbidity (%)	Mortality (%)
Bankura	2	270	2	0	0.00	0.74	0.00
Birbhum	2	32	2	0	0.00	6.25	0.00
Hooghly	4	15	9	0	0.00	60.00	0.00
Howrah	23	384	38	0	0.00	9.90	0.00
Malda	2	57	3	0	0.00	5.26	0.00
North 24 Pgs	48	1003	492	1	0.20	49.05	0.10
South 24 Pgs	21	41	21	0	0.00	51.22	0.00
Total	102	1802	567	1	0.18	31.47	0.06

TRYPANOSOMIOSIS

Trypanosomosis, also known as “Surra” in India, is a haemoprotozoan disease caused by an extra-cellular parasite, *Trypanosoma evansi*. The disease is mechanically transmitted by biting flies. i.e. Tabanus, Stomoxys, Haematopota, Chrysops, Hippobosca. Trypanosomosis in susceptible animals, including camels (dromedary and bactrian), horses, dog, buffalo, cattle, goat and pigs is manifested by intermittent fever, directly associated with parasitaemia, together with a progressive anaemia, loss of condition, transient local or general urticarial eruptions cachectic, staggering gait, paraplegia, circling movements, nervous excitement, hitting of head against hard object, profuse salivation, coma, death (per-acute cases within 6-12 hrs). Abortions have been reported in buffalos and camels and there are indications that the disease causes immunodeficiency. Animals subjected to stress like malnutrition, pregnancy, work are more susceptible to disease.

In the year 2023-2024, only three (3) incidences of Trypanosomiasis were reported which is less than the previous year (13 incidences). No death was recorded due to Trypanosomiasis in this year. Incidences were recorded in Bankura (2) and Purba Bardhaman (1) district.

TABLE – I
DISTRICTWISE OUTBREAK OF TRYPANOSOMIOSIS REPORTED IN WEST
BENGAL FOR THE YEAR 2023-2024

District	No of Outbreak	Population at risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
Bankura	2	159	2	0	0.00	1.3	0.00
Purba Bardhaman	1	5	1	0	0.00	20.0	0.00
Total	3	164	3	0	0.00	1.8	0.00

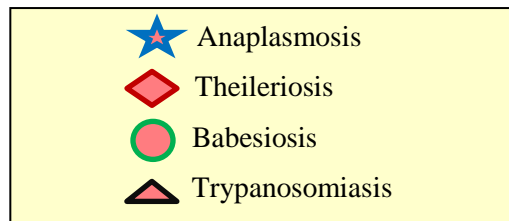
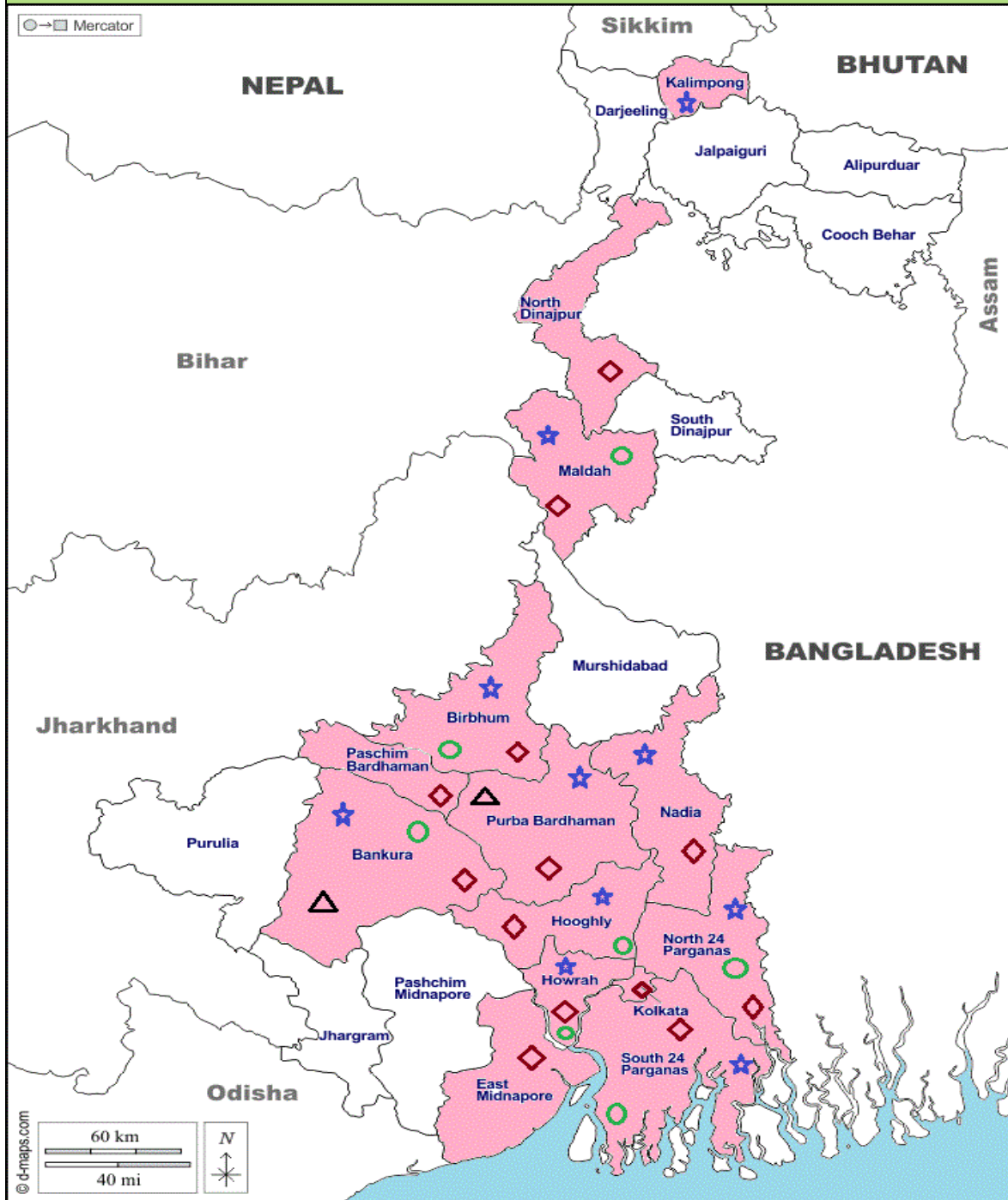
TABLE – II**MONTH WISE OUTBREAK OF TRYPANOSOMIOSIS REPORTED IN WEST BENGAL FOR THE YEAR 2023-2024**

District	No of Outbreak	Population at risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
April	1	5	1	0	0.00	20.0	0.00
January	1	89	1	0	0.00	1.1	0.00
March	1	70	1	0	0.00	1.4	0.00
Total	3	164	3	0	0.00	1.8	0.00

BLOOD PROTOZOAN DISEASES RECORDED DURING LAST TEN YEARS IN WEST BENGAL

Disease	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Trypanosomiasis	2	4	2	2	4	6	10	6	13	3
Anaplasmosis	50	8	7	3	13	115	189	223	266	226
Theileriosis	7	7	13	18	77	250	208	243	372	298
Babesiosis	4	3	4	5	19	45	26	66	197	102

District-wise incidences of Anaplasmosis, Theileriosis, Babesiosis & Trypanosomiasis in West Bengal in 2023-24



EQUINE INFECTIOUS ANAEMIA (SWAMP FEVER)

Equine infectious anemia (EIA) is a viral, and sometimes fatal, disease that only affects equids (horses, ponies, zebras, mules, and donkeys). The causal agent of equine infectious anemia is an RNA virus, classified in the *Lentivirus* genus, family Retroviridae. The virus is readily inactivated by most common disinfectants, such as bleach, ethanol, iodophore disinfectants, phenolic compounds, glutaraldehyde, and formalin. It is found in nearly all countries worldwide. All equids infected with EIA virus remain **lifelong carriers**. Such individuals constitute the natural reservoir of the virus and ensure its perpetuation in equid populations over time. The combination of frequent carriers and mechanical transmission by blood-feeding insects explains why EIA is found in equine populations in a wide range of climatic zones and countries around the world. Although EIA is usually considered a blood-borne infection, all body fluids and tissues should be regarded as potentially infectious, especially during febrile episodes when viral levels are high. EIA can be difficult to recognize and may be confused with other diseases. It is found in nearly all countries worldwide, including the United States. It is a reportable animal disease in all States. It is not a threat to human health. Clinical signs range from mild to severe and appear within a few weeks after infection. However, it may take 60 days or more for the horse to test positive. There is no treatment. Infected animals that survive the disease become virus carriers and can infect other equids for life. They must either be euthanized or permanently isolated from other equids to prevent transmission. Carriers may also experience clinical flare-ups, often following stress or strenuous work.

In West Bengal, **no** outbreak of EIA was reported during last Ten (10) years. In the previous year (2021-22), 14 (fourteen) serum samples collected from different parts of West Bengal and send to National Research Centre on Equine (NRCE), Hissar. As per laboratory diagnosis all samples were found negative to EIA.

In the reporting year (2023-24) **total 17 (Seventeen) samples** were collected from equines under the jurisdiction of Kolkata Mountain Police & SVSPA, Barrackpore and send to National Research Centre on Equine (NRCE), Hissar. As per laboratory diagnosis **all samples were found negative to EIA.**

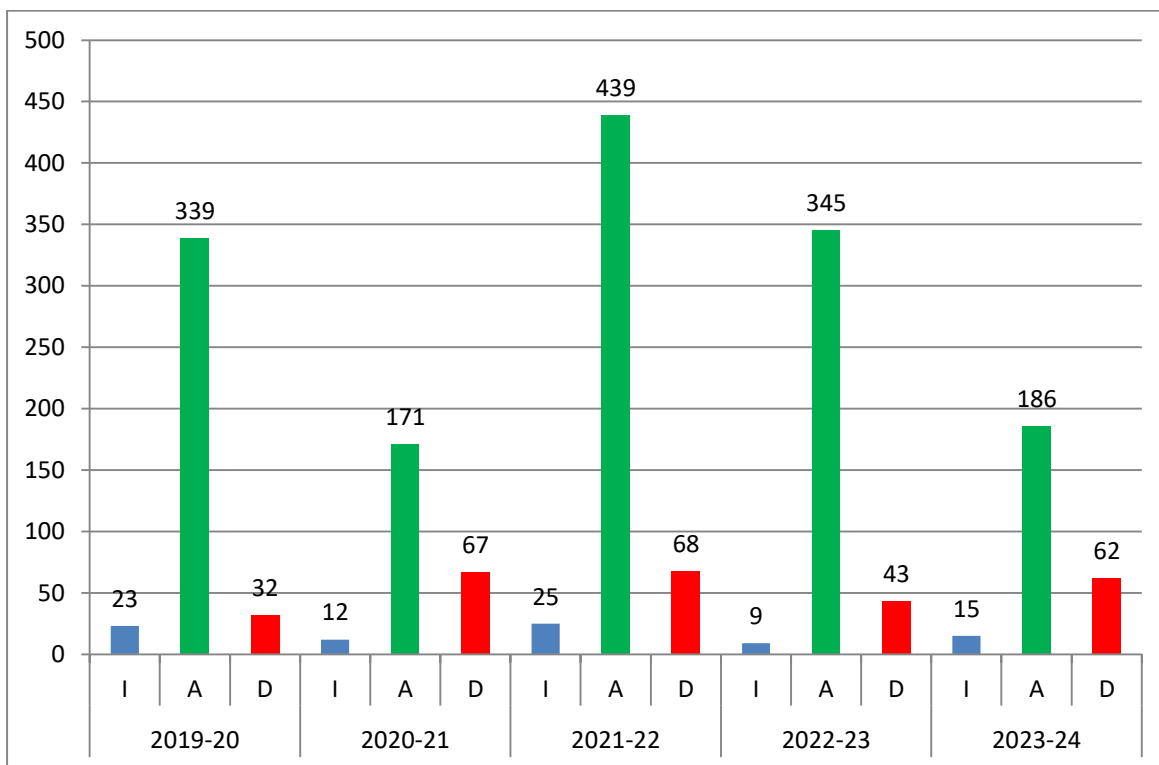
PESTE -des - PETITS RUMINANTS (PPR)

Peste des petits ruminants (PPR), is an acute contagious disease caused by the small ruminant Morbillivirus in the family Paramyxoviridae. It is also known as Sheep and Goat Plague or Pseudo-Rinderpest of small ruminants. It affects mainly sheep and goats and occasionally wild small ruminants. Based on the fact that PPR has been reported on a few occasions in camels, cattle and buffaloes, those animal species are considered to be susceptible although their potential role in the circulation of PPR virus has not been formally established. PPR occurs in Africa except Southern Africa, in the Arabian Peninsula, throughout most of the Near East and Middle East, and in Central and South-East Asia. The clinical disease resembles rinderpest in cattle. It is usually acute and characterized by pyrexia, serous ocular and nasal discharges, diarrhoea and pneumonia, and erosive lesions on different mucous membranes particularly in the mouth. In the worst situations, PPR-related morbidity is as high as 100%, with a mortality rate that can reach 90%. In areas where the disease is endemic, the mortality rate may be lower, but the disease has a more insidious impact on flock productivity. Each year, PPR causes economic losses due to animal deaths, reduced production and the cost of fighting the disease. At necropsy, erosions may be noted in the gastrointestinal and urogenital tracts. The lungs may show interstitial bronchopneumonia and often secondary bacterial pneumonia. PPR can also occur in subclinical form. PPR must be confirmed by laboratory methods, as bluetongue, foot and mouth disease and other erosive or vesicular conditions, as well as contagious caprine pleuropneumonia, can cause clinically similar disease. The World Organisation for Animal Health (WOAH, founded as OIE) and the FAO, in their joint Global Strategy for control and eradication of PPR, have set the goal of eradicating this disease by 2030.

T A B L E – I

EPIDEMIOLOGICAL OBSERVATION ON PPR

Year	No. of outbreak	Population at Risk	Affected	Death	C.F.R (%)	Morbidity (%)	Mortality (%)
2019-2020	23	3067	339	32	9.96	18.84	1.88
2020-2021	12	1066	171	67	39.18	16.04	6.29
2021-2022	25	4921	439	68	15.49	8.92	1.38
2022-2023	9	1780	345	43	12.46	19.38	2.42
2023-24	15	605	186	62	33.33	30.74	10.25



■ **Outbreak**
■ **Affected**
■ **Death**

Year-wise Outbreak, Affected and Death due to PPR in West Bengal in last 5 years

In the year 2023 – 2024, fifteen (15) outbreaks were reported in West Bengal which is more in comparison to the last year (9 outbreaks). The morbidity rate was 30.74% and mortality rate was 10.25% with a case fatality rate of 33.33% in 2023-24. Outbreaks were reported from South 24 Parganas, Paschim Midnapur, Hooghly, Howrah, Bankura and Purba Bardhaman with highest outbreak in South 24 Parganas district.

T A B L E – II**MONTHWISE PPR OUTBREAK REPORTED IN WEST BENGAL FOR THE YEAR
2023-24**

Month	No. of outbreak	Population at risk	Affected	Death	C.F.R (%)	Morbidity (%)	Mortality (%)
April	2	151	52	11	21.15	34.43	7.28
May	1	50	25	1	4.00	50.00	2.00
June	2	82	28	7	25.00	34.14	8.53
July	1	90	7	1	14.28	7.77	1.11
August	0	0	0	0	0	0	0
September	4	72	7	5	71.42	9.72	6.94
October	3	80	39	28	71.79	48.75	35.00
November	0	0	0	0	0	0	0
December	1	50	12	0	0.00	24.00	0.00
January	0	0	0	0	0	0	0
February	1	30	16	9	56.25	53.33	30.00
March	0	0	0	0	0	0	0
TOTAL	15	605	186	62	33.33	30.74	10.25

TABLE - III**DISTRICTWISE OUTBREAKS OF PPR REPORTED IN WEST BENGAL FOR THE
YEAR 2023 – 2024**

District	No. of outbreak	Population at risk	Affected	Death	C.F.R (%)	Morbidity (%)	Mortality (%)
South 24 Pgs	6	308	107	20	18.69	34.74	6.49
Paschim Midnapur	1	90	7	1	14.28	7.77	1.11
Hooghly	2	20	2	1	50.00	10.00	5.00
Howrah	3	67	20	12	60.00	29.85	17.91
Bankura	1	65	37	28	75.67	56.92	43.07
Purba Bardhaman	2	55	13	0	0.00	23.63	0.00
Total	15	605	186	62	33.33	30.74	10.25

District-wise outbreak of PPR in West Bengal in 2023-24

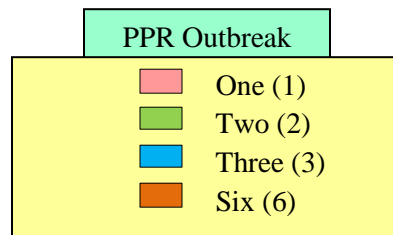
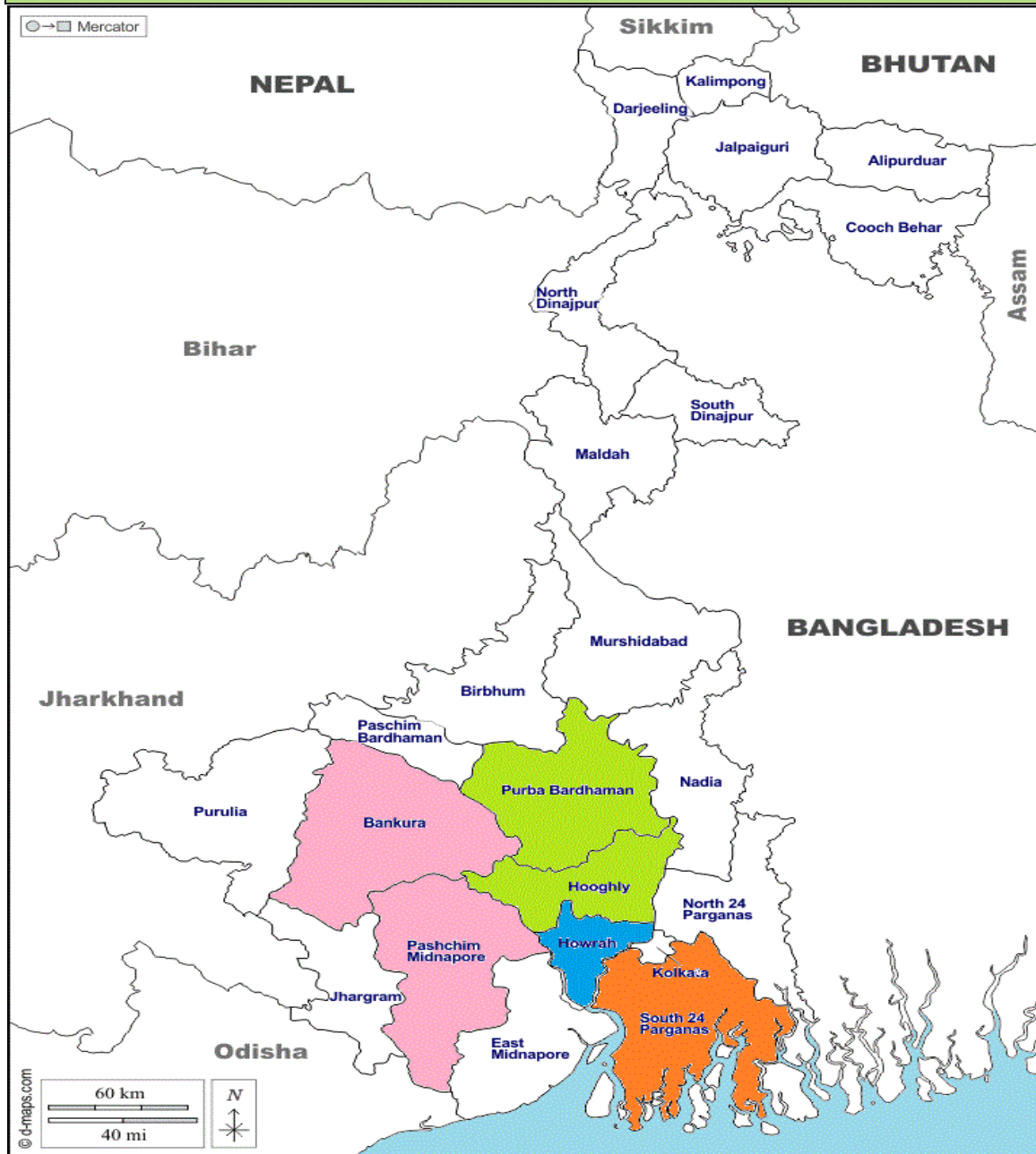
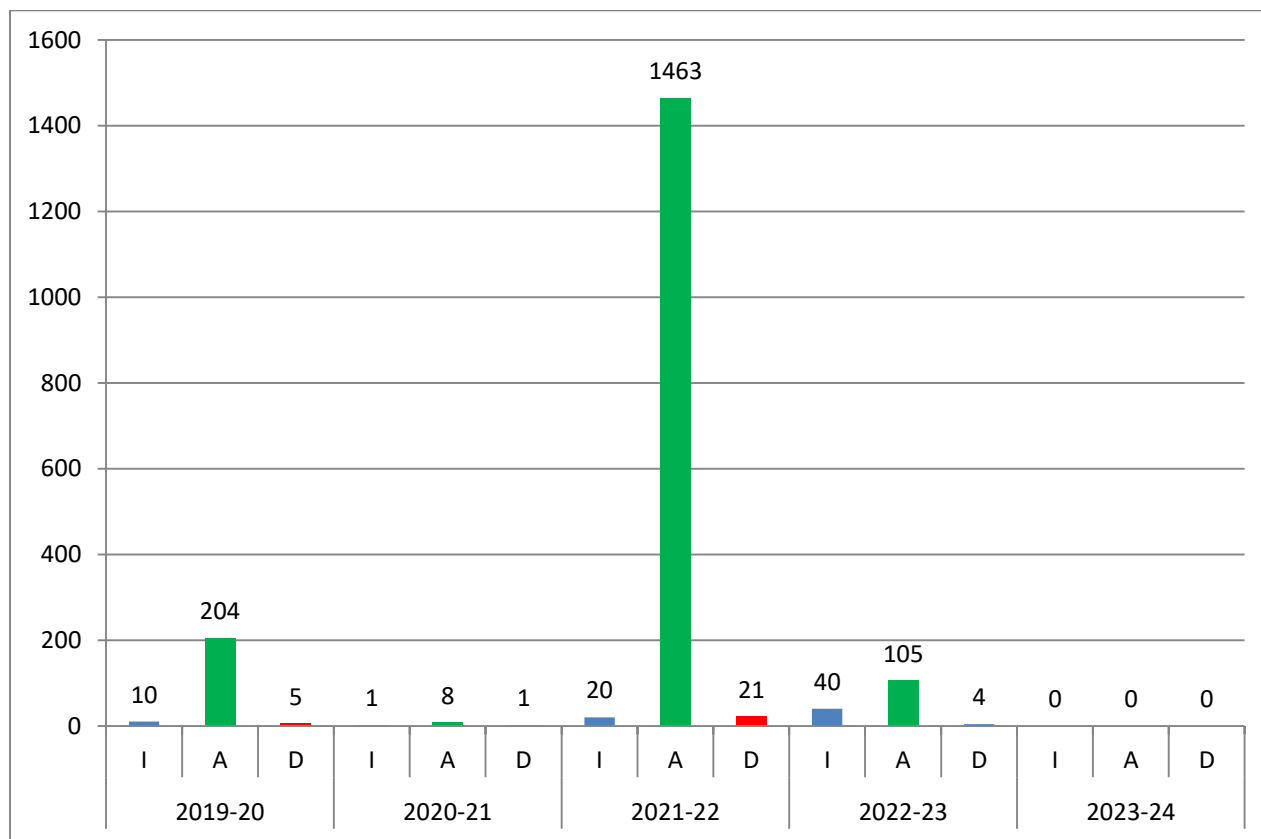


TABLE – IV
DISTRICT WISE PPR OUTBREAK REPORTED IN WEST BENGAL DURING
LAST TEN YEARS

District	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Coochbehar	0	0	0	0	0	0	0	0	0	0
Jalpaiguri	4	5	0	1	1	0	0	0	0	0
Alipurduar	0	0	0	0	0	0	0	0	0	0
Darjeeling	0	0	0	0	0	1	0	0	0	0
Kalimpong	0	0	0	0	0	0	0	0	0	0
Uttar Dinajpur	0	6	3	0	0	0	0	0	0	0
Dakshin Dinajpur	1	3	4	0	1	0	0	0	0	0
Malda	7	4	2	0	0	0	1	7	4	0
Murshidabad	0	1	1	0	0	0	0	0	0	0
Nadia	4	11	3	0	1	8	1	0	1	0
North 24 Parganas	1	1	0	0	3	0	1	2	1	0
South 24 Parganas	0	2	0	2	0	2	0	6	1	6
Kolkata	2	1	0	0	0	0	1	1	0	0
Howrah	12	13	9	1	0	0	0	2	0	3
Hooghly	4	9	3	2	1	1	3	1	2	2
Purba Bardhaman	9	4	4	2	0	1	1	1	0	2
Paschim Bardhaman	0	0	0	0	0	0	0	0	0	0
Birbhum	4	22	3	1	0	1	1	1	0	0
Bankura	9	9	2	0	1	4	0	2	0	1
Purba Midnapur	0	0	0	0	1	0	0	0	0	0
Paschim Midnapur	1	7	6	6	0	3	0	1	0	1
Purulia	4	33	14	3	2	2	3	1	0	0
Jhargram	0	0	0	0	0	0	0	0	0	0
TOTAL	62	131	54	18	11	23	12	25	09	15



■ Outbreak

■ Affected

■ Death

Year-wise Outbreak, Affected and Death due to Goat Pox in West Bengal in last 5 years

During the reporting year (2023-24) no outbreak was recorded in West Bengal. It is necessary to improve the surveillance programme to justify the absence of disease in the districts.

TABLE – IV
DISTRICT WISE REPORTED OUTBREAK OF GOAT POX DURING LAST TEN
YEARS

District	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Cooch Behar	0	0	0	1	0	0	0	0	0	0
Jalpaiguri	0	0	0	0	0	0	0	0	0	0
Darjeeling	0	0	0	0	0	0	0	0	1	0
Kalimpong	0	0	0	0	0	0	0	0	0	0
Alipurduar	0	0	0	0	0	0	0	0	0	0
Uttar Dinajpur	0	0	0	0	0	0	0	0	0	0
Dakshin Dinajpur	0	0	0	0	0	0	0	0	0	0
Malda	0	0	0	0	0	0	0	0	1	0
Murshidabad	0	0	0	0	0	0	0	0	0	0
Nadia	1	0	0	2	0	1	0	0	0	0
North 24 Pgs	3	0	0	0	5	2	0	3	0	0
South 24 Pgs	0	0	0	0	0	0	0	0	8	0
Howrah	0	0	2	3	5	4	1	5	26	0
Kolkata	0	0	0	0	0	0	0	0	0	0
Hooghly	0	2	0	0	0	0	0	7	1	0
Purba Bardhaman	2	0	1	0	0	0	0	0	0	0
Paschim Bardhaman	0	0	0	0	0	0	0	0	0	0
Birbhum	0	0	0	1	0	0	0	4	1	0
Bankura	0	0	0	0	0	0	0	0	0	0
Purba Midnapur	0	0	0	0	0	3	0	0	2	0
Paschim Midnapur	0	0	0	0	0	0	0	0	0	0
Purulia	0	0	0	0	0	0	0	0	0	0
Jhargram	0	0	0	0	0	0	0	0	0	0
TOTAL	6	2	3	7	10	10	1	21	40	0

SWINE FEVER (HOG CHOLERA)

Classical swine fever (CSF) is a highly infectious viral disease caused by an enveloped RNA virus in the genus Pestivirus of the family Flaviviridae. Globally, CSF virus (CSFV) is considered a high-consequence pathogen and cases should be reported to the World Organisation for Animal Health (WOAH). National animal health authorities report cases to WOAH; hence, suspected cases of CSF are usually reported first to local animal health authorities. CSFV naturally infects members of the Suidae family, i.e. domestic and wild pigs. CSFV has only one serotype. The virus is moderately fragile and does not persist in the environment or spread long distances by the airborne route. However, it can survive in moist, protein-rich environments such as pork tissues and body fluids, especially if kept cold or frozen. Virus survival times of up to several years have been observed in frozen pork meat. There are no treatments for CSFV infection. Instead, vaccination against CSFV with live, attenuated vaccines (LAVs) prevents the disease and is usually performed in regions where CSF is endemic.

T A B L E – I
EPIDEMIOLOGICAL OBSERVATION ON SWINE FEVER

Year	No. of outbreak	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
2019-2020	0	0	0	0	0	0
2020-2021	0	0	0	0	0	0
2021-2022	0	0	0	0	0	0
2022-2023	0	0	0	0	0	0
2023-2024	0	0	0	0	0	0

In the reporting year (2023-24) no outbreak was reported from any district out of twenty three districts of our State. Hence, surveillance of all districts where pig population is more should have been improved to prevent any under-reporting.

AVIAN INFLUENZA

Avian Influenza is a highly infectious and extremely contagious disease of birds caused by Influenza type 'A' virus belonging to Orthomixoviridae (RNA) family. Avian influenza (AI) viruses are classified by the subtypes of their hemagglutinin (H) and neuraminidase (N) proteins. There are 16 H proteins (H1–H16) and nine N proteins (N1–N9), so many combinations of the two proteins are possible. Some examples of avian influenza subtypes include H5N1, H5N3, H5N8, H7N2, and H7N8. Wild birds are thought to be the natural hosts of the virus. The virus circulates among birds worldwide. The Avian influenza virus primarily infects birds and does not typically infect humans. In 1997, however, the first instance of direct bird-to-human transmission of H5N1 was documented during an outbreak of avian influenza among poultry in Hong Kong. This is something that is being watched carefully and is being investigated during recent epizootics. Outbreaks of low- pathogenic avian influenza (LPAI) cause little mortality and are easily overlooked, but they may evolve to become HPAI by simple drifting of virus even by a single point mutation. Therefore, it may also be a potential source of origin of deadly human influenza virus. High-pathogenicity avian influenza (HPAI) viruses arise from the mutation of some H5 and H7 LPAI viruses. Stamping-out programs have been successfully used to quickly eliminate HPAI viruses. The morbidity and mortality rates of LPAI viral infections are usually low, unless the infection is accompanied by secondary bacterial or viral infections or aggravated by environmental stressors. Even in the absence of secondary pathogens, HPAI viruses cause severe, systemic disease with high mortality rates in chickens, turkeys, and other gallinaceous poultry; mortality rates can be as high as 100% in a few days.

All influenza viruses are genetically labile, genetic composition of the viruses“ changes from time to time. These constant changes in the antigenic composition or “point mutation” of influenza viruses are known as antigenic drift. Influenza viruses including subtype from different species can swap or “re-assort” genetic materials and merge during re assortment process. This phenomenon is known as antigenic shift. Infected birds shed virus through faecal materials, saliva, nasal and ocular secretions. Avian influenza viruses spread among susceptible birds with contaminated excretions. It is believed that most of H5N1 infection in human has resulted from contact with infected poultry or contaminated surfaces. The HPAI can survive in contaminated manure for 3 months. A single gram of contaminated manure can contain enough viruses to infect 1 million birds. In water virus can survive from 4 days to 30 days.

Recently, Government of India has given importance for active surveillance of H9N2 Avian Influenza virus in the country with routine surveillance as usual in this regard. Action Plan for prevention, control & containment of Avian Influenza (Revised -2021) of GoI should be followed in any case.

EPIDEMIOLOGICAL OBSERVATION ON AVIAN INFLUENZA

Year	No. of outbreak	No. of District involved	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
2019-2020	0	0	0	0	0	0	0
2020-2021	0	0	0	0	0	0	0
2021-2022	0	0	0	0	0	0	0
2022-2023	0	0	0	0	0	0	0
2023-2024	0	0	0	0	0	0	0

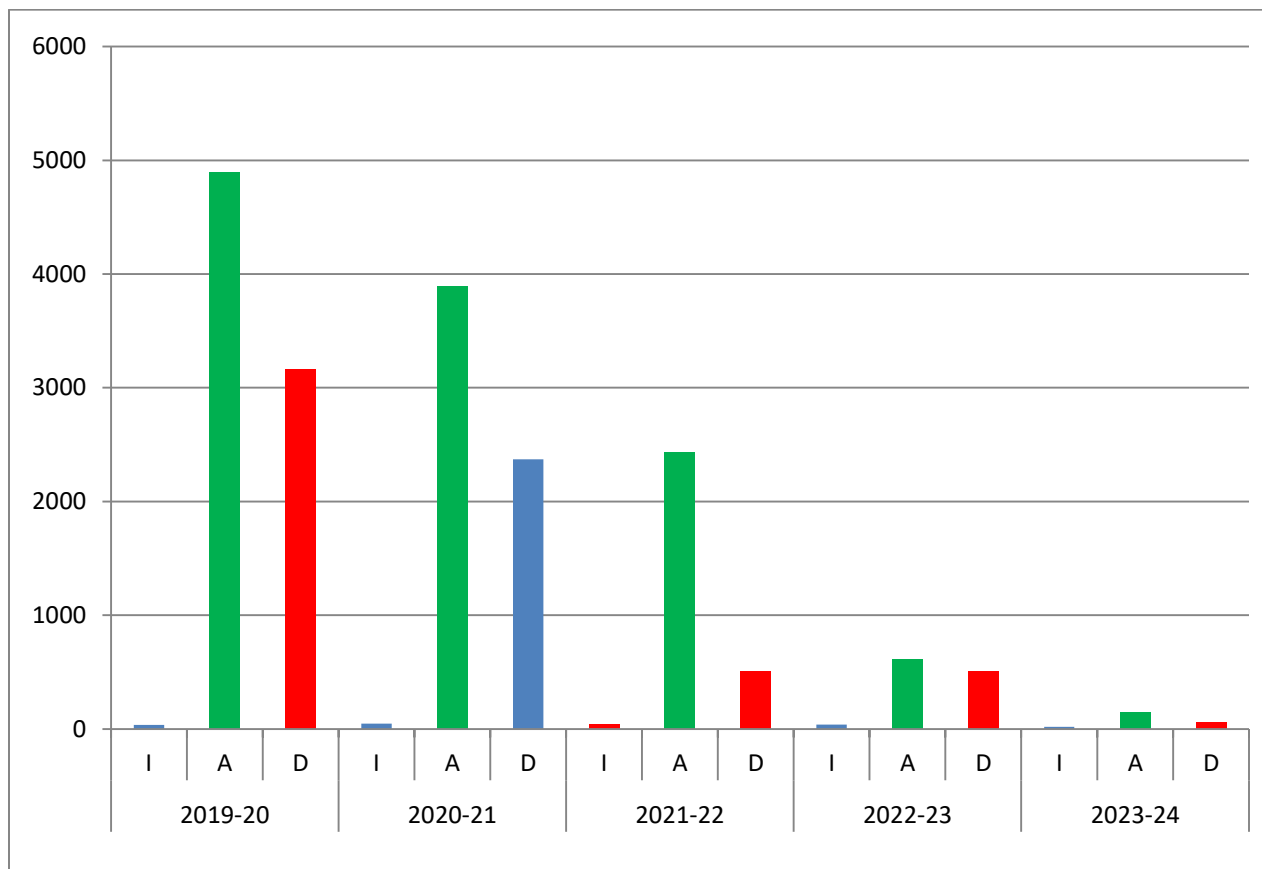
In the year 2023-24, no outbreak was reported from West Bengal.

RANIKHET DISEASE (NEW CASTLE DISEASE)

Ranikhet Disease or Newcastle disease is a highly contagious disease of birds caused by a para-myxo virus. Birds affected by this disease are fowls, turkeys, geese, ducks, pheasants, partridges, guinea fowl and other wild and captive birds, including ratites such ostriches, emus and rhea. The clinical signs in affected birds can vary. The disease can be present in a very acute form with sudden onset and high mortality or as a mild disease with respiratory distress or a drop in egg production as the only detectable clinical signs. This disease is characterized by respiratory distress, nervous signs leading to wing paralysis, in-coordination of movement and lameness, haemorrhagic ulcerative enteritis with viscera-tropic and neurotropic strains. The lesions of the digestive tract are more prominent, haemorrhages often with ulceration of the lymphoid patches may be found in the mucosa of the gizzard and along the length of the intestinal tract. Petechial haemorrhages may be present in the mucosa of the pro-ventriculus, ilio-caecal region, on the mesentery, peritoneum, heart and other tissues. A sub-clinical (asymptomatic) form of Newcastle disease and many intermediate forms of the disease can also occur. Severity of ND depends on the virulence and genetic type of the infecting virus and host susceptibility. There is no treatment for Newcastle disease. Effective vaccines are available and some poultry are vaccinated routinely. This disease can be prevented by considering vaccination and practicing strict biosecurity measures in poultry premises

T A B L E - I
EPIDEMIOLOGICAL OBSERVATION ON RANIKHET DISEASE

Year	No. of outbreak	Population at Risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
2019-2020	36	23860	4897	3163	64.59	20.52	13.26
2020-2021	48	12185	3894	2372	60.91	31.96	19.47
2021-2022	36	17016	2437	502	20.60	14.32	2.95
2022-2023	37	2809	616	508	82.47	21.93	18.08
2023-24	18	1222	144	60	41.67	11.78	4.91



■ Outbreak ■ Affected ■ Death

Year-wise Outbreak, Affected and Death due to RD in West Bengal in last 5 years

In the year 2023 - 2024, total thirty-seven (18) outbreaks were reported which is less as compared to previous year. Case fatality rate was 41.67%. Maximum outbreak was reported in North 24 Parganas district (11).

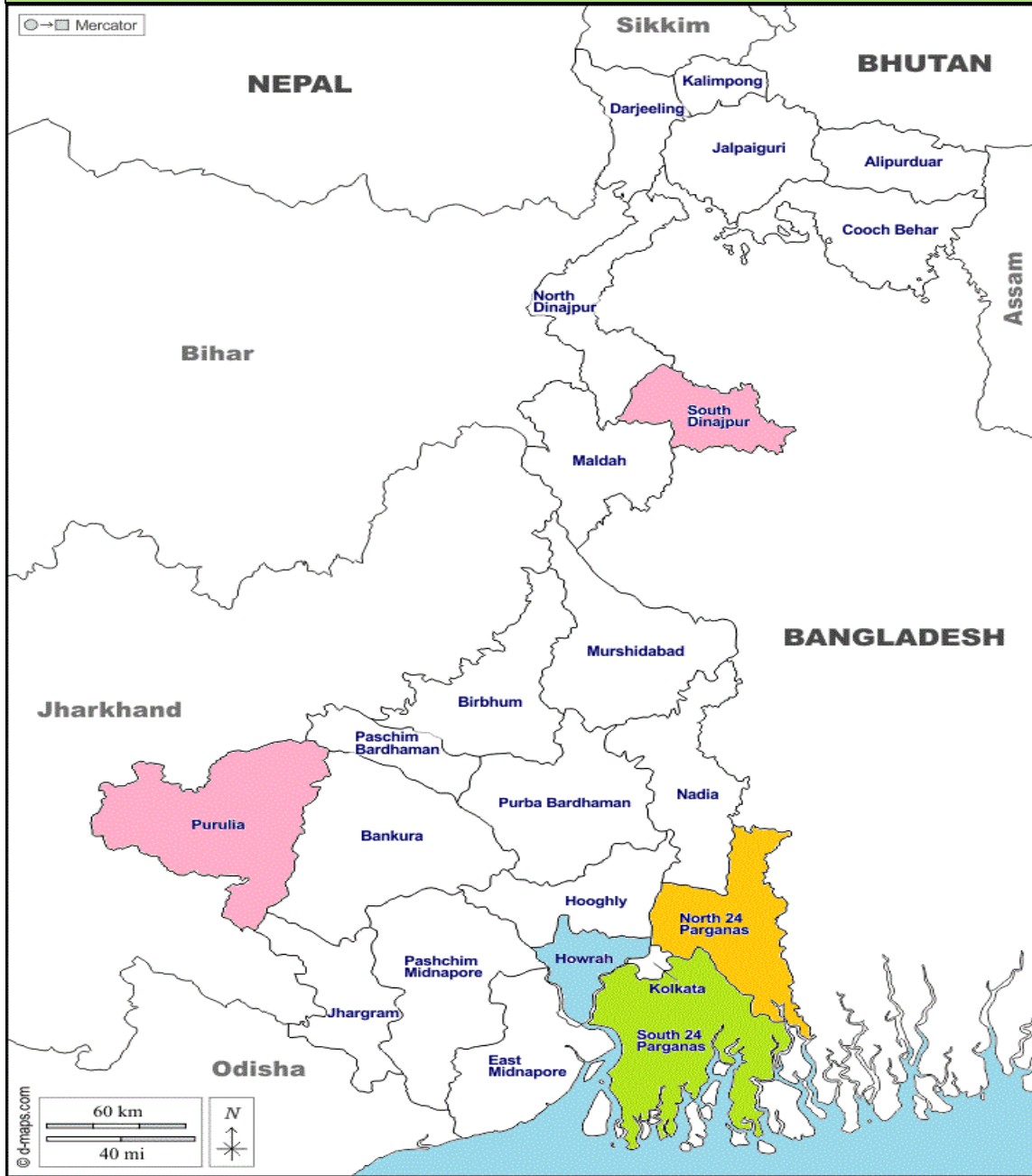
T A B L E – II
DISTRICTWISE OUTBREAKS OF RANIKHET DISEASE REPORTED IN WEST BENGAL FOR THE YEAR 2023 – 2024

District	No. of outbreak	Population at risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
South 24 Pgs	2	285	52	32	61.54	18.25	11.23
North 24 Pgs	11	691	34	17	50.00	4.92	2.46
Purulia	1	4	1	1	100.00	25.00	25.00
Howrah	3	212	52	7	13.46	24.53	3.30
Dakshin Dinajpur	1	30	5	3	60.00	16.67	10.00
Total	18	1222	144	60	41.67	11.78	4.91

T A B L E – III
MONTHWISE OUTBREAKS OF RANIKHET DISEASE REPORTED IN WEST BENGAL FOR THE YEAR 2023 –2024

Month	No. of outbreak	Population at risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
April	1	250	50	30	60.00	20.00	12.00
May	3	245	64	10	15.63	26.12	4.08
June	3	280	6	3	50.00	2.14	1.07
July	3	187	4	4	100.00	2.14	2.14
August	2	110	5	5	100.00	4.55	4.55
September	1	2	1	1	100.00	50.00	50.00
October	2	65	7	5	71.43	10.77	7.69
November	0	0	0	0	0.00	0.00	0.00
December	1	10	5	0	0.00	50.00	0.00
January	0	0	0	0	0.00	0.00	0.00
February	0	0	0	0	0.00	0.00	0.00
March	2	73	2	2	100.00	2.74	2.74
Total	18	1222	144	60	41.67	11.78	4.91

District-wise outbreak of RD in West Bengal in 2023-24



RD Outbreak

- One (1)
- Two (2)
- Three (3)
- Eleven (11)

T A B L E – I V
DISTRICT WISE RANIKHET DISEASE OUTBREAKS REPORTED IN WEST BENGAL
DURING LAST TEN YEARS

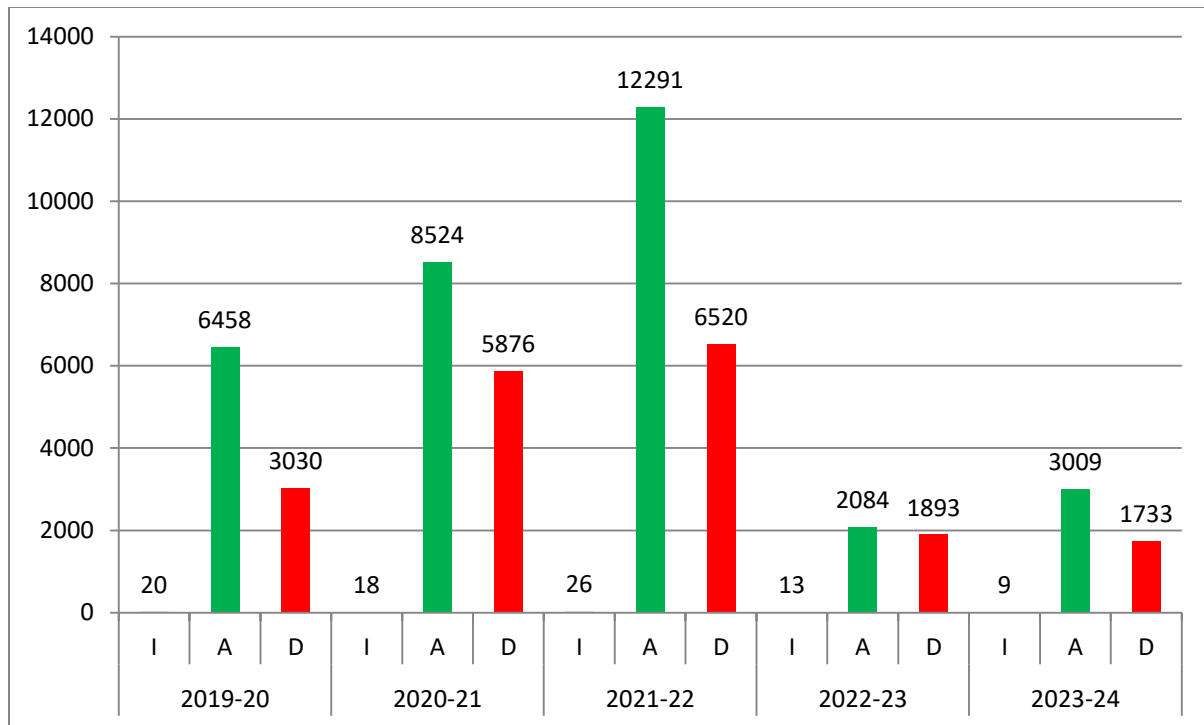
District	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2022-22	2022-23	2023-24
Coochbehar	0	0	0	2	0	0	0	0	0	0
Jalpaiguri	4	3	0	1	0	0	1	2	0	0
Alipurduar	0	0	0	0	0	0	0	0	0	0
Darjeeling	0	0	0	0	0	0	1	0	0	0
Uttar Dinajpur	10	1	7	0	0	0	0	0	0	0
Dakshin Dinajpur	14	6	2	0	0	0	0	0	0	1
Malda	0	0	1	0	1	0	0	1	0	0
Murshidabad	1	0	3	0	0	0	0	0	0	0
Nadia	1	0	3	0	2	0	0	1	0	0
N-24 Parganas	11	1	2	9	9	6	2	1	4	11
S-24 Parganas	4	0	3	8	7	3	15	3	0	2
Kolkata	3	0	0	0	0	6	5	18	19	0
Howrah	5	1	4	9	13	11	7	3	2	3
Hooghly	1	0	0	1	1	0	2	0	5	0
Purba Bardhaman	6	1	4	0	0	0	2	0	0	0
Paschim Bardhaman										
Birbhum	6	9	13	0	1	4	0	1	0	0
Bankura	0	0	2	0	1	1	0	2	0	0
Purba Midnapur	2	9	6	3	1	6	11	4	6	0
Paschim Midnapur	0	0	0	0	0	0	2	0	0	0
Purulia	12	9	0	0	0	0	0	0	1	1
Jhargram	0	0	0	0	0	0	0	0	0	0
TOTAL	80	40	49	33	36	36	48	36	37	18

INFECTIOUS BURSAL DISEASE (GUMBORO DISEASE)

Infectious bursal disease is an economically important viral disease of young domestic chickens worldwide. Infectious bursal disease was first identified in Gumboro, Delaware, in 1962. The etiologic agent of infectious bursal disease is the infectious bursal disease virus (IBDV), a double-stranded RNA virus in the family Birnaviridae. Two serotypes of IBDV have been identified. The serotype 1 viruses cause disease in chickens. It is an acute, highly contagious viral infection in chickens manifested by inflammation and subsequent atrophy of the bursa of Fabricius, various degrees of nephro-nephritis and immunosuppression. Clinically the disease is seen only in chickens older than 3 weeks. The feathers around the vent are usually stained with faeces containing plenty of urates. The IBD virus belongs to the Birnaviridae family of RNA viruses. Two serotypes are known to exist, but only serotype 1 is pathogenic. The virus is highly resistant to most disinfectants and environmental conditions. In contaminated premises, it could persist for months and in water, forage and faeces for weeks. The incubation period is short and the first symptoms appear 2-3 days after infection. The lesions in the bursa of Fabricius are progressive. In the beginning, the bursa is enlarged, oedematous and covered with a gelatinous transudate. The kidneys are affected by a severe urate diathesis. In an acute outbreak and manifestation of the typical clinical signs, the diagnosis is not difficult. The diagnosis could be confirmed by detection of typical gross lesions throughout a patho-anatomical study. IBD should be differentiated from IBH (inclusion body hepatitis). The application of live vaccines in chickens is a key point in the prevention of IBD and should be related to the levels of maternal antibodies.

T A B L E – I
EPIDEMIOLOGICAL OBSERVATION ON INFECTIOUS BURSAL DISEASE

Year	No. of outbreak	Population at risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
2019-2020	20	35180	6458	3030	46.92	18.36	8.61
2020-2021	18	16987	8524	5876	68.93	50.18	34.59
2021-2022	26	52861	12291	6520	53.05	23.25	12.33
2022-2023	13	37200	2084	1893	90.83	5.60	5.09
2023-24	9	23717	3009	1733	57.59	12.69	7.31



■ Outbreak ■ Affected ■ Death

Year-wise Outbreak, Affected and Death due to HS in West Bengal in last 5 years

During the reporting year (2023-24), thirteen (9) outbreaks were reported which is less than the last year (13 outbreaks reported). Case fatality rate was 57.59% in this year. Maximum outbreaks were reported from South 24 Parganas district (4). Surveillance of all districts should be improved to give any reason if there any under-reporting.

TABLE-II
DISTRICTWISE REPORTED OUTBREAK OF IBD IN WEST BENGAL FOR THE YEAR
2023-2024

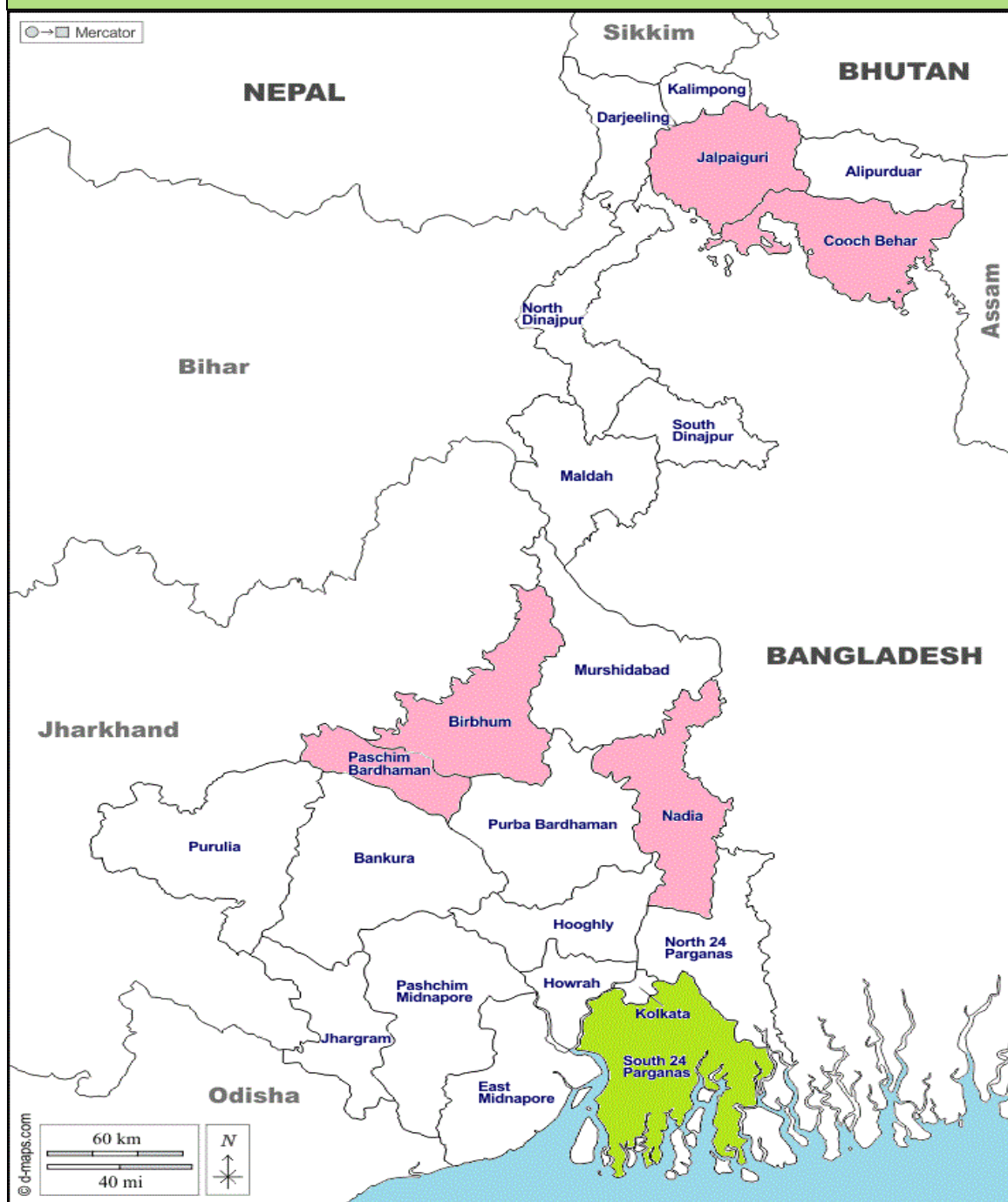
District	No. of outbreak	Population at risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
South 24 Pgs	4	6100	432	319	73.84	7.08	5.23
Coochbehar	1	2908	2000	986	49.30	68.78	33.91
Jalpaiguri	1	6369	42	30	71.43	0.66	0.47
Paschim Bardhaman	1	4350	100	50	50.00	2.30	1.15
Nadia	1	2490	125	48	38.40	5.02	1.93
Birbhum	1	1500	310	300	96.77	20.67	20.00
Total	9	23717	3009	1733	57.59	12.69	7.31

T A B L E – III

MONTHWISE REPORTED OUTBREAK OF IBD IN WEST BENGAL FOR THE YEAR
2023 – 2024

Month	No. of outbreak	Population at risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
April	1	450	22	9	40.91	4.89	2
May	2	5398	2125	1034	48.66	39.37	19.16
June	2	5300	400	304	76.00	7.55	5.74
July	0	0	0	0	0	0	0
August	2	1850	320	306	95.63	17.30	16.54
September	0	0	0	0	0.00	0.00	0.00
October	1	6369	42	30	71.43	0.66	0.47
November	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0
March	1	4350	100	50	50.00	2.30	1.15
Total	9	23717	3009	1733	57.59	12.69	7.31

District-wise outbreak of IBD in West Bengal in 2023-24



IBD Outbreak

One (1)

Four (4)

T A B L E – I V
DISTRICT WISE IBD OUTBREAKS REPORTED IN WEST BENGAL DURING LAST
TEN YEARS

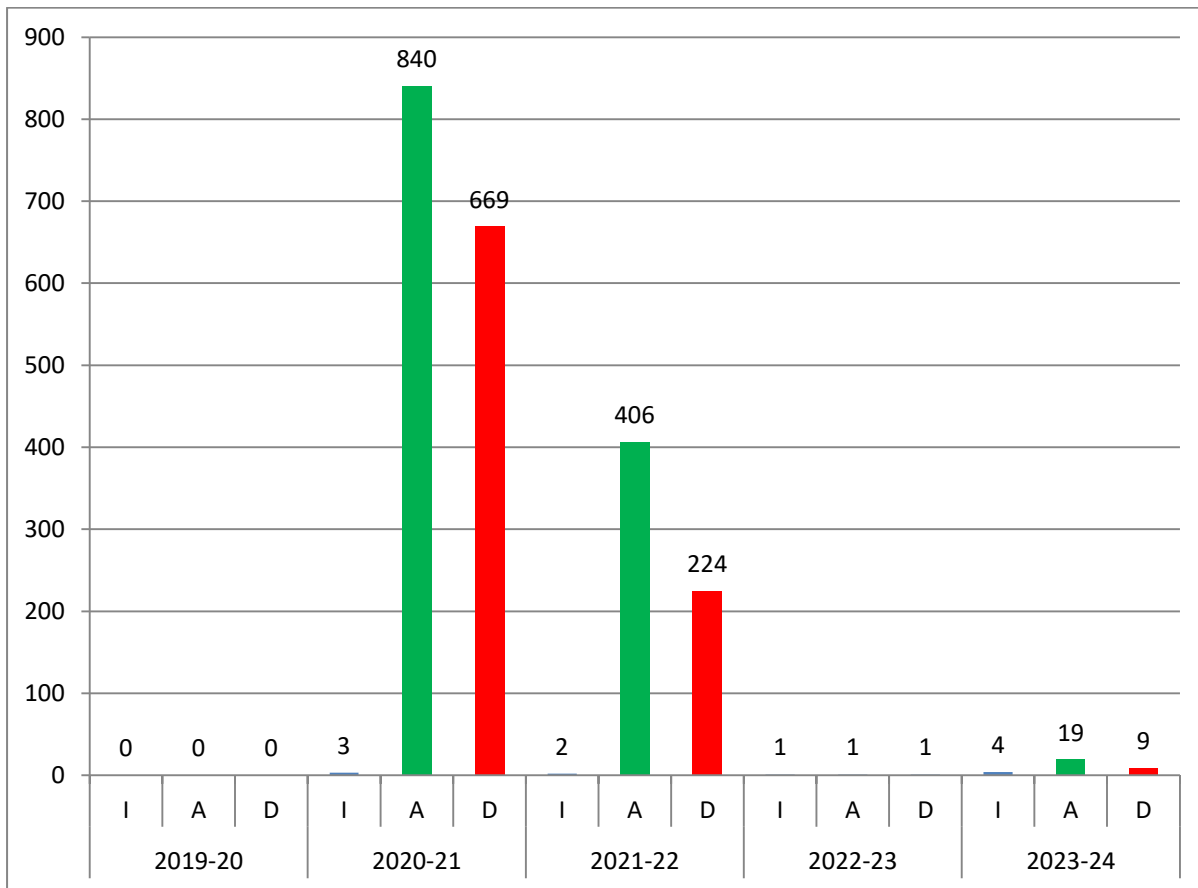
District	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Coochbehar	0	0	0	0	0	0	0	0	0	1
Jalpaiguri	0	0	0	0	0	0	0	0	0	1
Darjeeling	0	0	0	0	0	0	1	0	0	0
Kalimpong	0	0	0	0	0	0	0	0	0	0
Alipurduar	0	0	0	0	0	0	0	0	0	0
Uttar Dinajpur	0	0	0	0	0	0	0	0	0	0
Dakshin Dinajpur	1	0	0	0	0	0	1	0	0	0
Malda	0	0	0	0	0	0	1	1	0	0
Murshidabad	0	0	0	0	0	0	0	0	0	0
Nadia	0	0	0	0	0	0	0	0	0	1
North 24 Parganas	1	0	3	2	2	7	3	5	5	0
South 24 Parganas	1	0	1	4	1	4	7	12	2	4
Howrah	1	0	0	0	0	0	3	0	1	0
Kolkata	0	0	0	0	0	0	0	0	1	0
Hooghly	0	0	0	0	0	2	0	0	0	0
Purba Bardhaman	0	0	0	2	1	1	1	1	0	0
Paschim Bardhaman	0	0	0	0	0	0	0	0	0	1
Birbhum	0	0	0	0	0	0	0	1	0	1
Bankura	0	0	0	0	0	0	0	1	3	0
Purba Midnapur	0	0	0	0	1	6	1	3	1	0
Paschim Midnapur	0	0	0	0	0	0	0	0	0	0
Purulia	0	0	0	0	0	0	0	1	0	0
Jhargram	0	0	0	0	0	0	0	0	0	0
TOTAL	4	0	4	8	5	20	18	26	13	9

DUCK PLAGUE (DUCK VIRAL ENTERITIS)

Duck viral enteritis (DVE) is an acute, highly contagious disease of ducks, geese, and swans of all ages, characterized by sudden death, a high mortality rate (particularly among older ducks), and hemorrhages and necrosis in internal organs. Duck viral enteritis virus (DVEV), the causative agent of DVE, is a member of the family Ortho-herpesviridae, subfamily Alphaherpesvirinae, and genus Mardivirus. DVEV induces vascular damage, especially in smaller blood vessels (veinules and capillaries). This damage leads to generalized hemorrhages and progressive degenerative changes in parenchymatous organs. An immunosuppressive state induced by DVE may explain the presence of secondary bacterial infections due to *Pasteurella multocida*, *Riemerella anatipestifer*, and *Escherichia coli*, which An immunosuppressive state induced by DVE may explain the presence of secondary bacterial infections due to *Pasteurella multocida*, *Riemerella anatipestifer*, and *Escherichia coli*, which frequently occur in natural outbreaks of DVE in ducklings. Like other herpesviruses, DVEV may undergo latency, and the trigeminal ganglion seems to be a latency site for the virus. Recovered birds may carry the virus in its latent form, and viral reactivation may be the cause of outbreaks in susceptible wild and domestic ducks. There is no treatment for DVE. Control of DVE is affected by depopulation, removal of birds from the infected environment, sanitation, and disinfection. The disease is prevented through immunization or by maintaining susceptible birds in a disease-free environment.

T A B L E – I
EPIDEMIOLOGICAL OBSERVATION ON DUCK PLAGUE

Year	No. of incidence	Population at risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
2019-2020	0	0	0	0	0.00	0.00	0.00
2020-2021	3	1600	840	669	79.64	52.50	41.81
2021-2022	2	2950	406	224	55.17	13.76	7.59
2022-2023	1	5	1	1	100	20	20
2023-24	4	1335	19	9	47.37	1.42	0.67



■ Outbreak

■ Affected

■ Death

Year-wise Outbreak, Affected and Death due to HS in West Bengal in last 5 years

During the reporting year 2023-24, only four (4) outbreaks were reported in the state. Outbreaks were reported from Kolkata, South 24 Parganas and Howrah district only. Surveillance, diagnosis as well as about disease reporting system of the districts should be improved as to detect more outbreaks, if any.

T A B L E – II**DISTRICTWISE OUTBREAK OF DUCK PLAGUE REPORTED IN WEST BENGAL
FOR THE YEAR 2023– 2024**

Districts	No. of outbreak	Population at risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
Kolkata	2	125	6	6	100.00	4.80	4.80
South 24 Pgs	1	1200	12	2	16.67	1.00	0.17
Howrah	1	10	1	1	100.00	10.00	10.00
Total	4	1335	19	9	47.37	1.42	0.67

T A B L E – III**MONTHWISE OUTBREAK OF DUCK PLAGUE REPORTED IN WEST BENGAL
FOR THE YEAR 2023– 2024**

Month	No. of outbreak	Population at risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
April	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0
July	1	25	5	5	100.00	20.00	20.00
August	2	1300	13	3	23.08	1.00	0.23
September	1	10	1	1	100.00	10.00	10.00
October	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0
Total	4	1335	19	9	47.37	1.42	0.67

District-wise outbreak of DP in West Bengal in 2023-24

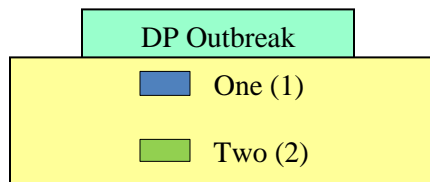
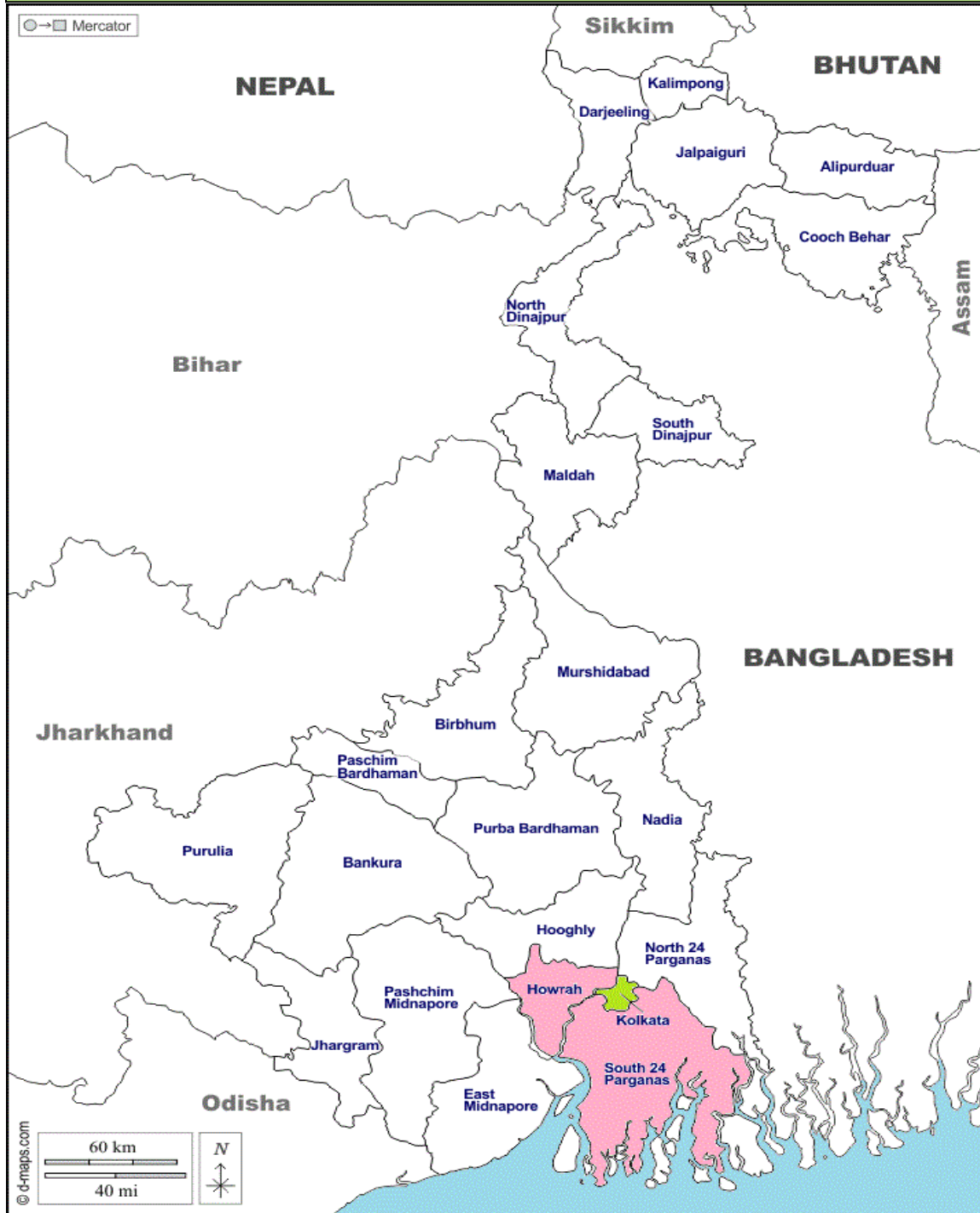
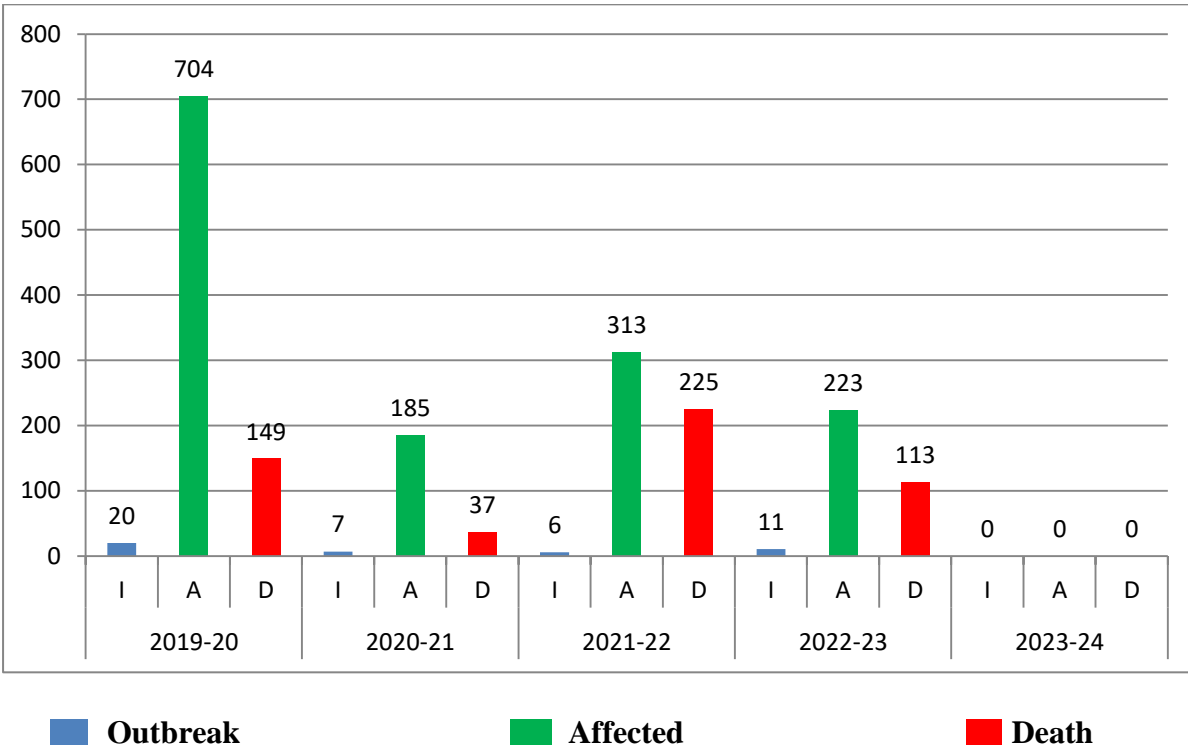


TABLE – IV**DISTRICT WISE DUCK PLAGUE OUTBREAKS REPORTED IN WEST BENGAL
DURING LAST TEN YEARS**

District	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Coochbehar	0	0	0	0	0	0	0	0	0	0
Jalpaiguri	0	0	0	0	0	0	0	0	0	0
Darjeeling	0	0	0	0	0	0	0	0	0	0
Kalimpong	0	0	0	0	0	0	0	0	0	0
Alipurduar	0	0	0	0	0	0	0	0	0	0
Uttar Dinajpur	0	0	0	0	0	0	0	0	0	0
Dakshin Dinajpur	8	3	1	0	0	0	0	0	0	0
Malda	0	0	0	0	0	0	0	0	0	0
Murshidabad	0	0	0	0	0	0	0	0	0	0
Nadia	0	0	0	0	0	3	1	0	0	0
N- 24 Parganas	1	0	0	0	0	0	0	0	0	0
S-24 Parganas	0	0	0	0	0	0	0	2	0	1
Kolkata	0	0	0	0	0	0	0	0	1	2
Howrah	0	0	0	0	0	0	0	0	0	1
Hooghly	0	0	0	0	0	0	0	0	0	0
Purba Bardhaman	0	0	0	0	0	0	0	0	0	0
Paschim Bardhaman	0	0	0	0	0	0	0	0	0	0
Birbhum	4	6	7	0	0	0	0	0	0	0
Bankura	0	0	0	0	0	0	0	0	0	0
Purba Midnapur	0	0	0	0	0	0	1	0	0	0
Paschim Midnapur	0	0	0	0	0	0	0	0	0	0
Purulia	1	0	0	0	0	0	0	0	0	0
Jhargram	0	0	0	0	0	0	0	0	0	0
TOTAL	14	9	8	0	0	3	2	2	1	4



Year-wise Outbreak, Affected and Death due to Fowl Pox in West Bengal in last 5 years

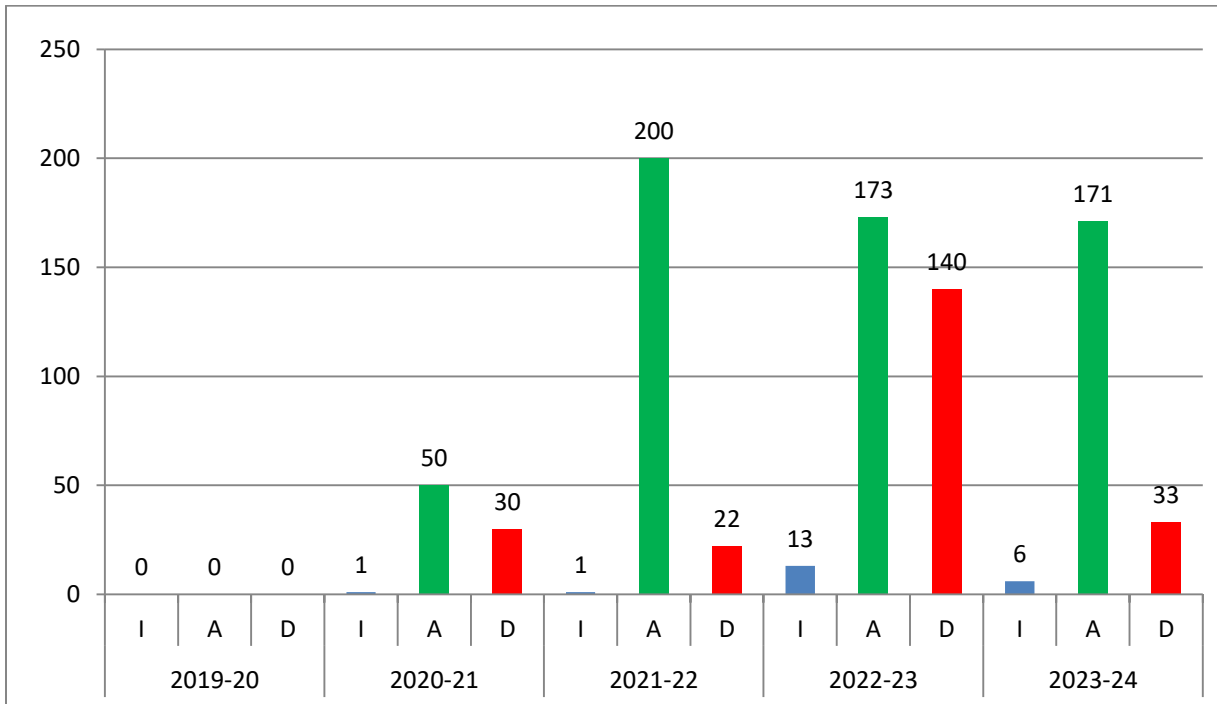
In the reporting year (2023-24), no outbreak was reported in West Bengal. It is necessary to improve the surveillance programme to justify the absence of disease in the districts.

FOWL CHOLERA (AVIAN PASTEURELLOSIS)

Fowl cholera affects domestic and wild birds worldwide. It usually occurs as a septicemia of sudden onset with high morbidity and mortality rates, but chronic infections and subclinical carrier states may also occur. *Pasteurella multocida*, the causative agent of fowl cholera, is a small, gram-negative, non-motile rod with a capsule. *P. multocida* is considered a single species although it includes three subspecies: *multocida*, *septica*, and *gallicida*. Subspecies *multocida* is the most common cause of disease, but *septica* and *gallicida* may also cause cholera-like disease. Clinical findings from fowl cholera vary greatly, depending on the species and age affected and the course of disease. In acute fowl cholera, finding a large number of dead birds without previous clinical signs is usually the first indication of disease. Affected birds may show symptoms including fever, cyanosis (bluish discolouration of the skin, wattle and comb), ruffled feathers, mucous discharge from the mouth, green watery diarrhea, respiratory difficulty, loss of appetite, etc. Just before death, the combs and wattles swell and turn bluish or purple in colour. A number of antibacterial drugs will decrease deaths from fowl cholera; however, deaths may resume when treatment is discontinued, showing that treatment does not eliminate *P. multocida* from a flock. Eradication of infection requires depopulation and cleaning and disinfection of buildings and equipment. The premise should then be kept free of poultry for a few weeks.

T A B L E – I
EPIDEMIOLOGICAL OBSERVATION ON FOWL CHOLERA

Year	No. of outbreak	Population at risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
2019-2020	0	0	0	0	0.00	0.00	0.00
2020-2021	1	150	50	30	60.00	33.33	20.00
2021-2022	1	700	200	22	11.00	28.57	3.14
2022-2023	13	6021	173	140	80.92	2.87	2.33
2023-24	6	3968	171	33	19.30	4.31	0.83



■ Outbreak

■ Affected

■ Death

Year-wise Outbreak, Affected and Death due to Fowl Cholera in West Bengal in last 5 years

In the reporting year (2023-24) six (6) outbreaks were reported in our State which is less than the previous year 2022-23. Outbreaks were reported from North 24 Parganas, South 24 Parganas and Birbhum districts.

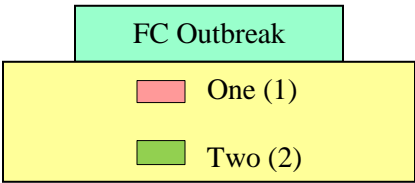
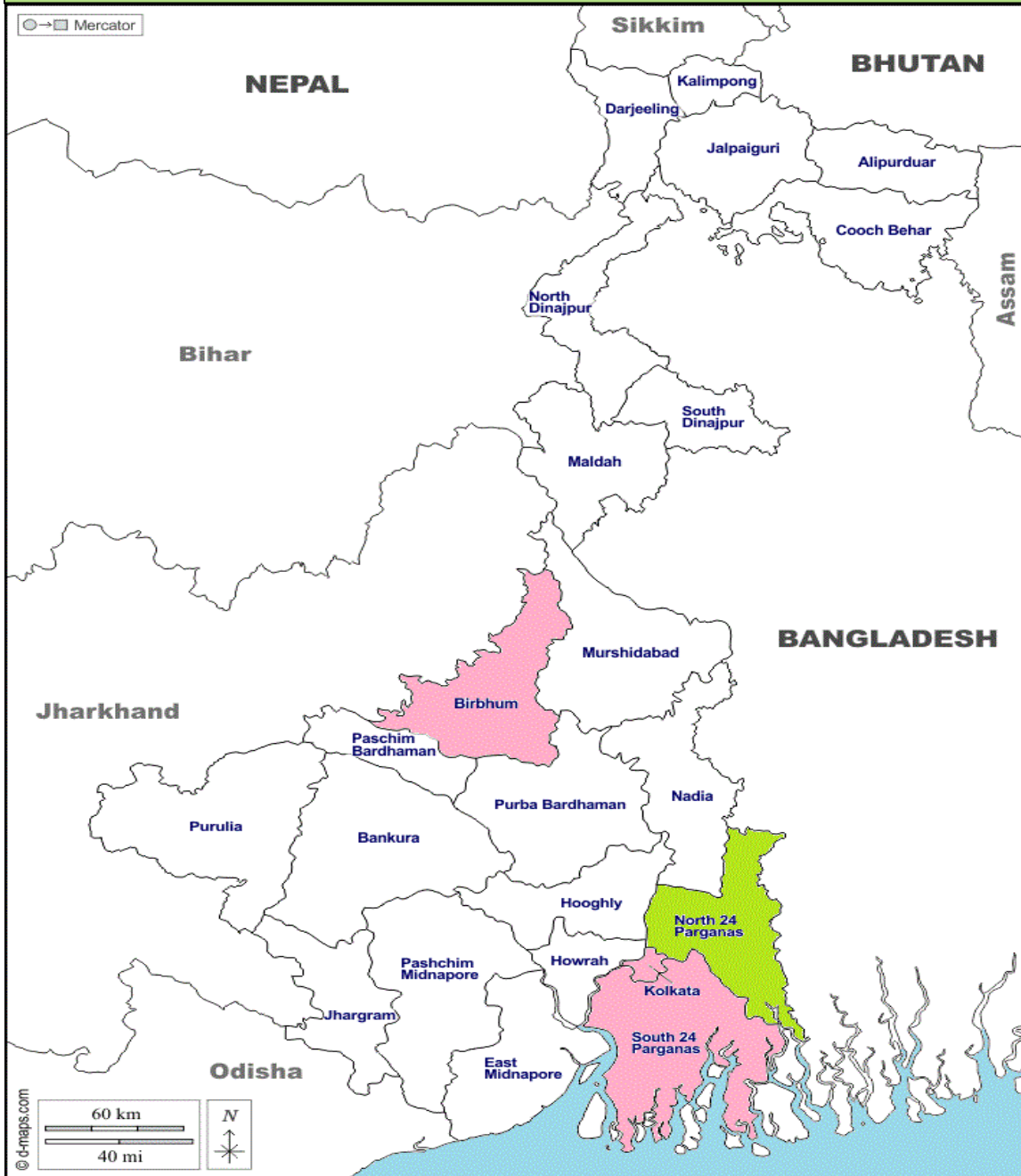
T A B L E – II
DISTRICTWISE OUTBREAK OF FOWL CHOLERA REPORTED IN WEST BENGAL
FOR THE YEAR 2023- 2024

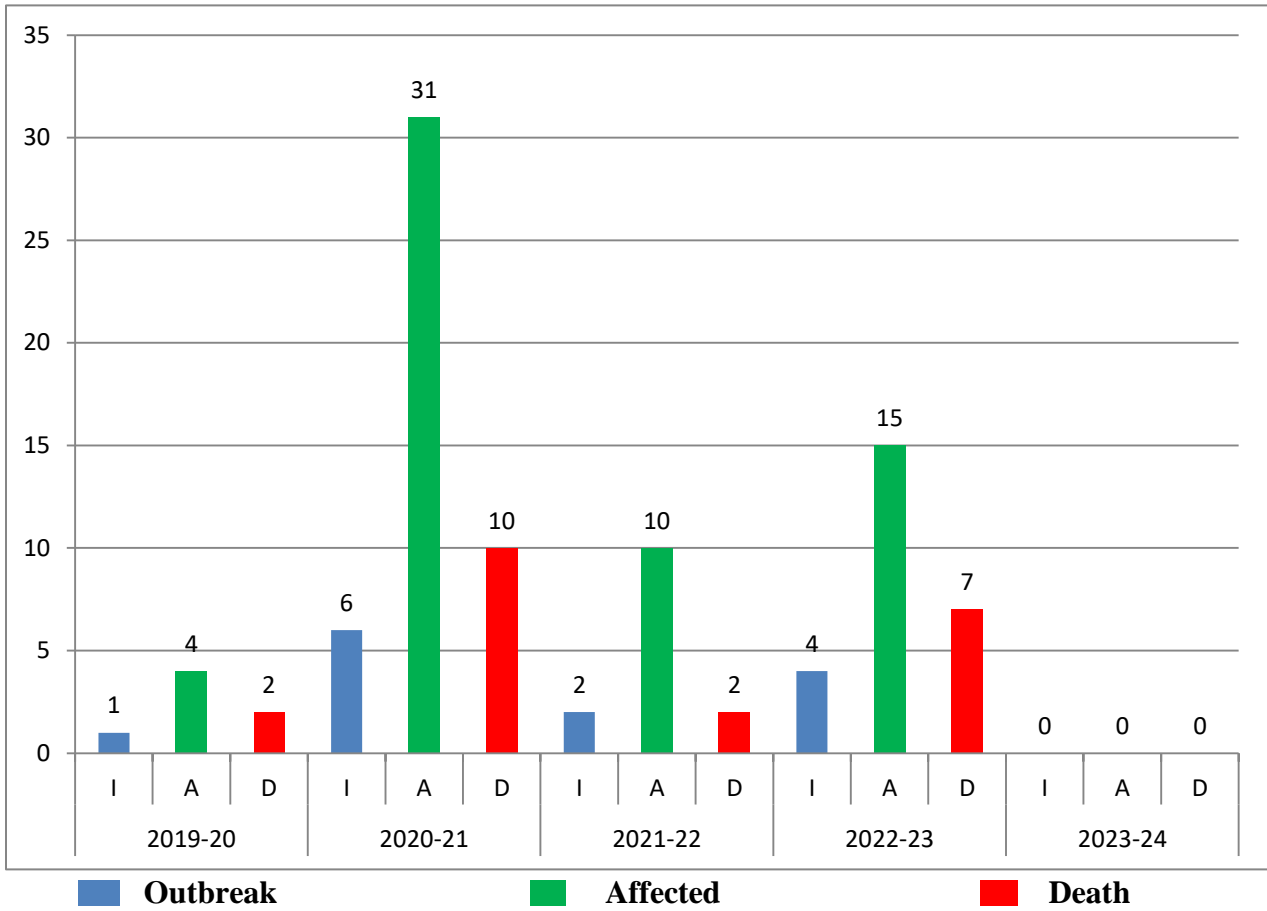
Month	No of outbreak	Population at risk	Affected	Death	Morbidity (%)	Mortality (%)	C.F.R (%)
North 24 Pgs	4	1868	24	15	1.28	0.80	62.50
Birbhum	1	2000	150	12	7.50	0.60	8.00
South 24 Pgs	1	100	6	6	6.00	6.00	100.00
Total	6	3968	180	33	4.54	0.83	19.30

T A B L E – II
MONTHWISE OUTBREAK OF FOWL CHOLERA REPORTED IN WEST BENGAL
FOR THE YEAR 2023- 2024

Month	No of outbreak	Population at risk	Affected	Death	Morbidity (%)	Mortality (%)	C.F.R (%)
December	1	25	1	1	4.00	4.00	100.00
January	1	2000	150	12	7.50	0.60	8.00
March	4	1943	29	20	1.49	1.03	68.97
Total	6	3968	180	33	4.54	0.83	19.30

District-wise outbreak of Fowl cholera in West Bengal in 2023-24





Year-wise Outbreak, Affected and Death due to Salmonellosis in West Bengal in last 5 years

During the year 2023-2024, no outbreak was reported in West Bengal. It is necessary to improve the surveillance programme to justify the absence of disease in the districts.

Lumpy skin disease (LSD)

Lumpy skin disease (LSD) is one of the recently emerged devastating viral diseases of cattle and buffaloes in India causing significant economic losses. It is an infectious viral disease of cattle caused by the lumpy skin disease virus (LSDV) of the Capripox virus genus in the Poxviridae family. LSD virus is identical to sheep pox virus (SPV) and goat pox virus (GPV) which are closely related although differ phyto-genetically. LSD virus is also known as Neethling virus. All breeds and stages of the animals, as well as both sexes, are susceptible to the LSD. Other factor responsible for disease spreads are environment, management, common water sources, etc.

Transmission:

- i. The virus transmission occurs through the movement of animals or unrestricted movement of stray animals. Infected animals excrete viruses in saliva as well as in nasal and ocular discharges. It can remain in saliva for about 11 days after the development of fever. The virus can be found in skin nodules even after 33 days of infection.
- ii. The virus is primarily transmitted by arthropod vectors like common biting flies (*Stomoxys* and *Biomjje*), mosquitoes (*Aedes* and *Culex*) and some ticks (*Rhiphicephalus* sp. and *Ambylomma* sp.). The multiplication of vectors during the monsoon months causes faster spread of the disease.
- iii. The virus also persists in the semen of infected bulls, so natural mating and artificial insemination can also spread the disease. Thus, it is advisable to use bulls after 22 days of intervals for mating.
- iv. Disease can also spread from females to calves with skin nodules; suckling calves can get infection from milk and from skin nodules in teat.
- v. LSDV remains viable in infected tissue of animals for around 120 days, for 35 days in dried crust and 18 days in hides at the farm.

Pathophysiology: Skin lesions are characterized by hyperplasia and ballooning degeneration of keratinocytes of the stratum spinosum, formation of epidermal microvesicles, and infiltration of inflammatory cells into the dermis. In lumpy skin disease, epidermal microvesicles coalesce into large vesicles that quickly ulcerate. Nodular proliferative lesions can occur internally also.

Symptoms :

- i. The symptoms of the disease aren't restricted to the mere appearance of skin nodules. In most of the cases, diseased animals are experienced severe pain, limbs swelling, loss of appetite and fever along with bleeding from the nodules.
- ii. Initially lacrimation, nasal and ocular discharge and excess salivation is observed.
- iii. Enlarged lymph nodes mainly sub scapular and pre femoral lymph node which are easily palpable.
- iv. The disease affects mainly the legs of cattle, which get swollen, followed by high fever ($>104^{\circ}\text{F}$) which persists for a week.
- v. Sharp reduction in milk yield.
- vi. Skin lesions or nodular skin is highly characteristic symptom of the disease. Soft blisters like nodules on the body can be seen after 48 hours of febrile condition. Size of lesion varies from 10-50 mm diameter. The number of lesions varies from few in mild cases to multiple in severe cases. Predilection sites are skin of the head, neck, perineum, genitalia, udder and limbs. Gradually some nodules open up like a deep wound in the skin. The infected animal takes a week to get rid-off this after a proper treatment of disease that starts with development of scabs in the centre of the nodules and take months to heal.
- vii. Blindness occurs in worst cases due to ulcerative lesions in cornea in one or both eyes.
- viii. Secondary bacterial infection in joints and legs leads to lameness in severe case, pneumonia and mastitis also observed.
- ix. Pregnant cows may abort and remain in anoestrous for several months.

Subclinical infection is also observed in the field conditions.

Post Mortem examination: Pock lesions can be found on the entire digestive, respiratory tract and even on every internal organ.

LSD can be confused with many diseases like Bovine viral diarrhea (Mucosal disease), Demodicosis, Bovine malignant catarrhal fever, Oncocercariasis, Insect bite allergies, Pseudo cowpox, Photosensitization, Urticaria, Contagious TB, Cowpox Virus.

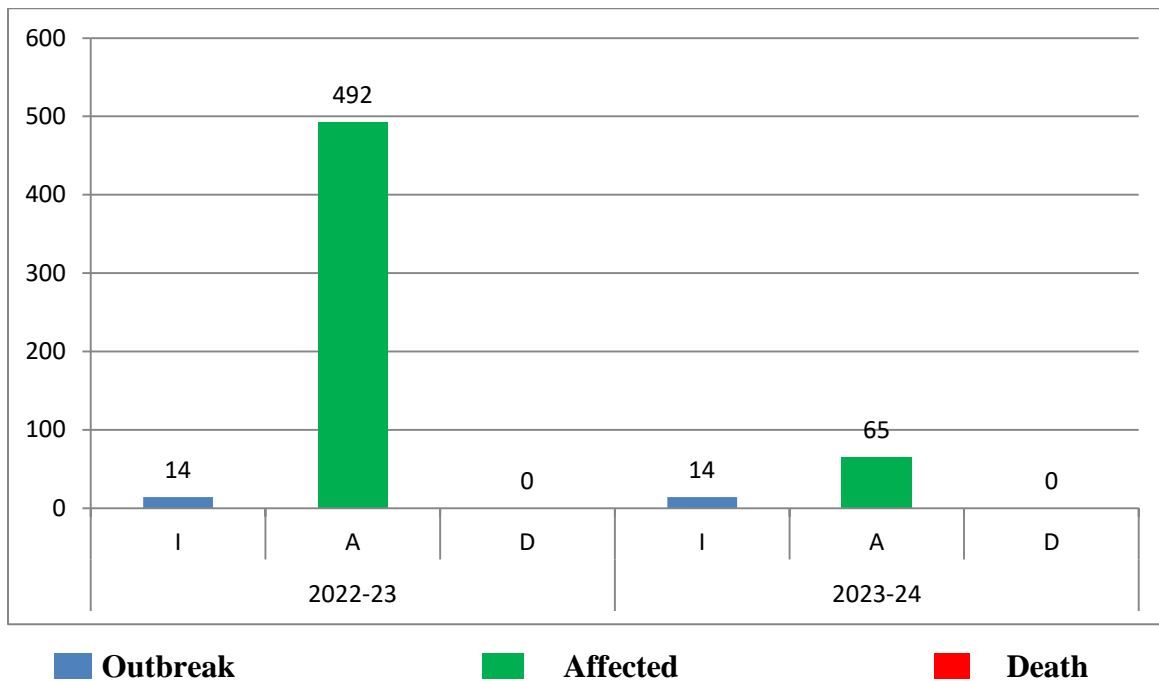
Therapeutic measures: There is no prescribed medicine for LSD. However, symptomatic treatment of infected animals may be done to prevent secondary bacterial infections.

There is no scientific proof so far that lumpy skin disease is a zoonotic disease which can spread from animals to humans or vice versa.

**TABLE – I
EPIDEMIOLOGICAL OBSERVATION ON LSD**

Year	No. of Outbreak	Population At Risk	Affected	Death	C.F.R. (%)	Morbidity (%)	Mortality (%)
2022-2023	14	18499	492	0	0.00	2.66	0.00
2023-24	14	2241	65	0	0.00	2.9	0.00

There was only **14(fourteen)** outbreaks of LSD reported in the year 2023-2024 all over the state which is similar to the previous year 2022-23. Highest outbreaks were confirmed in Kalimpong (8) district and two outbreaks each from Howrah, Malda and South 24 Parganas were noted. Maximum outbreaks were reported in the months of May, June and July which correlates with high arthropod population in these months. No death was reported due to LSD in West Bengal.



Year-wise Outbreak, Affected and Death due to LSD in West Bengal in last 5 years

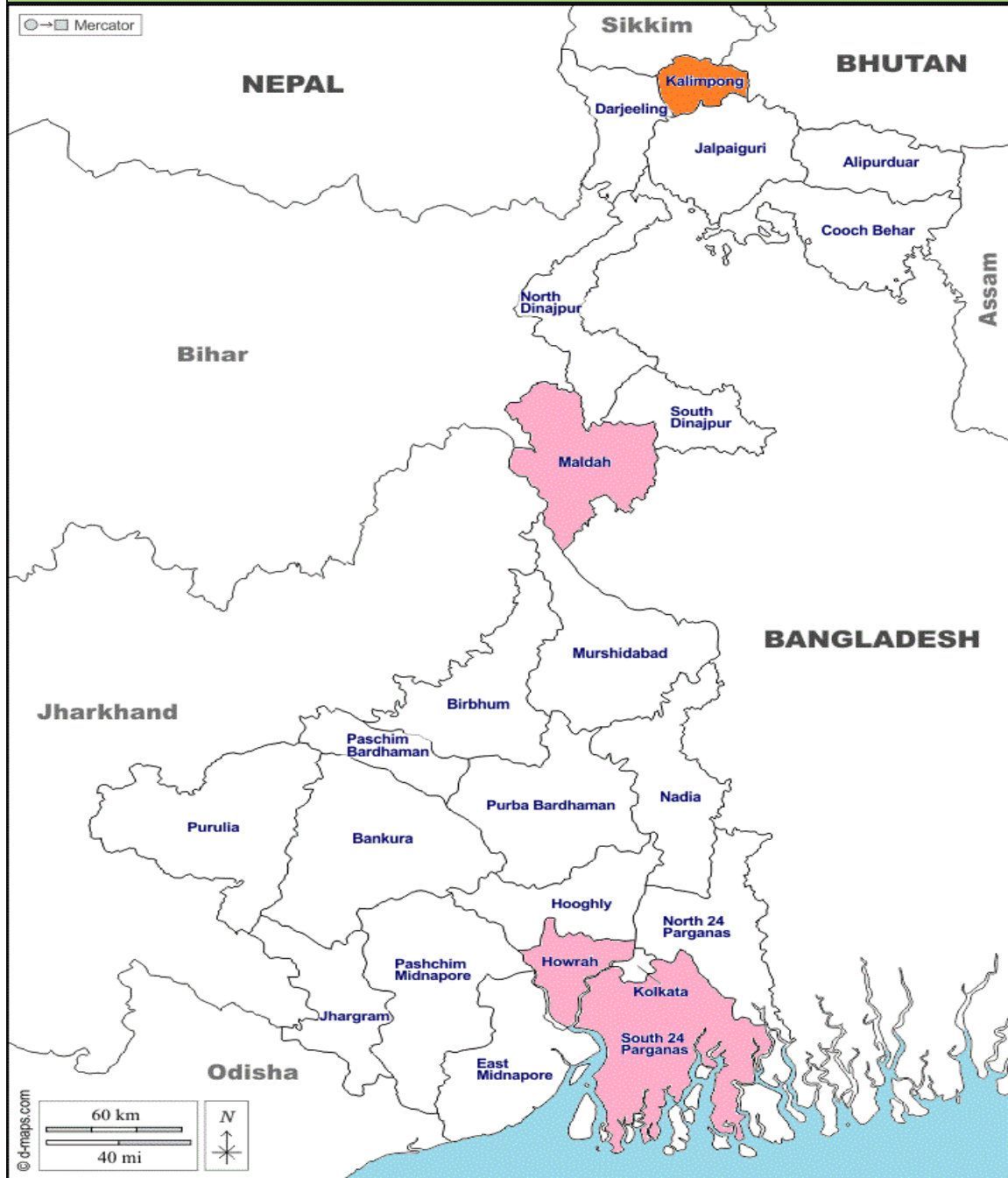
T A B L E – II
DISTRICT WISE LSD OUTBREAKS REPORTED IN WEST BENGAL FOR THE YEAR
2023-2024

District	No. of outbreak	Population at risk	Affected	Death	C.F.R (%)	Morbidity (%)	Mortality (%)
Howrah	2	158	18	0	0.00	11.4	0
Malda	2	63	2	0	0.00	3.2	0
South 24 Pgs	2	950	5	0	0.00	0.5	0
Kalimpong	8	1070	40	0	0.00	3.7	0
TOTAL	14	2241	65	0	0.00	2.9	0

T A B L E - III
MONTHWISE LSD OUTBREAK REPORTED IN WEST BENGAL FOR THE YEAR
2023 – 2024

Month	No. of outbreak	Population at risk	Affected	Death	C.F.R (%)	Morbidity (%)	Mortality (%)
April	0	0	0	0	0.00	0.00	0.00
May	3	958	22	0	0.00	2.3	0.00
June	8	1070	40	0	0.00	3.7	0.00
July	1	150	1	0	0.00	0.7	0.00
August	0	0	0	0	0.00	0.00	0.00
September	0	0	0	0	0.00	0.00	0.00
October	2	63	2	0	0.00	3.2	0.00
November	0	0	0	0	0.00	0.00	0.00
December	0	0	0	0	0.00	0.00	0.00
January	0	0	0	0	0.00	0.00	0.00
February	0	0	0	0	0.00	0.00	0.00
March	0	0	0	0	0.00	0.00	0.00
TOTAL	14	2241	65	0	0.00	2.9	0.00

District-wise outbreak of LSD in West Bengal in 2023-24



LSD Outbreak

Two (2)

Eight (8)

TABLE – IV
DISTRICT WISE LSD OUTBREAKS REPORTED IN WEST BENGAL
DURING LAST TWO YEARS

DISTRICT	2022-23	2023-24
Coochbehar	0	0
Jalpaiguri	0	0
Alipurduar	0	0
Darjeeling	1	0
Kalimpong	0	8
Uttar Dinajpur	0	0
Dakshin Dinajpur	0	0
Malda	1	2
Murshidabad	1	0
Nadia	0	0
North 24 Pgs.	4	0
South 24 Pgs.	0	2
Kolkata	0	0
Howrah	1	2
Hooghly	0	0
Purba Bardhaman	5	0
Paschim Bardhaman	0	0
Birbhum	0	0
Bankura	0	0
Purba Midnapur	0	0
Paschim Midnapur	4	0
Purulia	0	0
Jhargram	0	0
Total	14	14

EPIDEMIOLOGY GLOSSARY

Active Immunity: Resistance to a disease, developed in response to an antigen (an infecting agent or a vaccine) and usually characterized, or distinguished, by the presence of antibodies produced by the host.

Active Surveillance: The process in which health departments (or responsible agencies) contact clinicians, laboratories, or other data sources to seek out information about disease cases.

Agent: A microorganism, chemical, type of radiation, or other factor whose presence, excessive presence, or (in deficiency diseases) relative absence can cause disease or damage to the human body.

Airborne Transmission: The spread of an infection by droplets or dust, with a particle spread of more than three feet through the air. It is considered to be a form of indirect transmission.

Analytic Epidemiology: The search for health-related causes and effects. Uses comparison groups to measure the relationship between exposures and outcomes and to test hypotheses about those relationships.

Assessment: Evaluation or study. For example, a community health assessment would be a study, or evaluation, of the health of a community.

Attack Rate: A kind of incidence rate that measures the proportion of persons in a narrowly defined population observed for a limited period of time, such as during an epidemic.

Bias: A flaw in either the study design or data analysis that leads to erroneous results.

Case: In epidemiology, a countable instance in the population or study group, of a particular disease, health disorder, or condition under investigation. Sometimes, an individual with the particular disease.

Case-Control Study: A type of observational analytic study. Two groups of individuals (*cases* of disease and non-diseased *controls*) are assembled and information is collected and compared on their exposures to the disease.

Case-Fatality Rate: The rate of death among people who already have a condition. It is usually measured as a decimal or a percent.

Category-Specific Rate: A rate that applies to a particular group of people, for example, males aged 18–25.

Chance: Unexpected, random, or unpredictable.

Clinical Disease: A disease that has been identified by its symptoms and features.

Cluster: A group of cases of a disease or other health-related condition that are closely connected in time and place. The number of cases may or may not exceed the expected number; frequently the expected number is not known.

Cohort: A well-defined group of people who have had a common experience or exposure and who are then followed up for the incidence of new diseases or events, as in a cohort study. A group of people born during a particular period or year is called a birth cohort.

Cohort Study: A type of observational analytic study. Inclusion in the study is based on exposure characteristics or membership in a group. Disease, death, or other health-related outcomes are then identified and compared.

Common Source Outbreak: An outbreak that results when a group of people are exposed to the same harmful influence, such as an infectious agent or toxin. If the group is exposed over a relatively brief period of time, so that all cases occur within one incubation period, the common source outbreak is further classified as a point source outbreak. In some common source outbreaks, persons may be exposed over a period of days, weeks, or longer, with the exposure being either intermittent or continuous.

Communicable Period: The period of time during which an infected host (person) remains capable of passing along the infective agent (for example, a virus).

Consistency: Reliability or uniformity of results or events.

Contact Transmission: The spread of an agent directly (person-to-person), indirectly, or by airborne droplets from less than three feet away.

Control: A comparison group of people in a case-control study who do not have the disease or condition being studied.

Correlation: The degree to which two or more measurements show a tendency to vary together. A measurement of the association or relationship between variables.

Crude Rate: The rate calculated for an entire population.

Data: Numerical information. Data is a plural term; the singular is datum.

Descriptive Epidemiology: Gathering, organizing, and summarizing data on “person” (Who is ill?), “time” (When did they become ill?), and “place” (Where could they have been exposed to the illness?).

Determinant: Any factor that brings about change in a health condition or in other specified characteristics.

Direct Transmission: The immediate transfer of an agent from a reservoir to a susceptible host by direct contact or droplet spread.

Disease Burden: The effect of a health problem measured by financial cost, death, illness, or other indicators.

Disease Investigation: outbreak investigation

Distribution: The frequency and pattern of health-related characteristics and events in a population.

Dot Map Or Dot Plot: A visual display of the specific data points of a variable that has a finite number of values, such as race or sex.

Droplet Spread: The direct transmission of an infectious agent by spraying of relatively large, short-ranged droplets produced by sneezing, coughing, or talking that travel only a short distance before falling to the ground.

Effectiveness: The degree to which an intervention or program produces the intended or expected results under real world conditions.

Efficacy: The degree to which an intervention or program produces the intended or expected results under ideal conditions.

Efficiency: The ability of an intervention or program to produce the intended or expected results with a minimum expenditure of time and resources.

Epidemic: The occurrence of more cases of a disease than expected in a given area or among a specific group of people over a particular period of time.

Epidemic Curve: A kind of graph, called a histogram, that shows the development of a disease outbreak or epidemic by plotting the number of cases by time of onset.

Epidemiological Triangle: The traditional model of infectious disease causation, which has three components: an external agent, a susceptible host, and an environment that brings the host and agent together so that disease occurs.

Epidemiology: The study of the factors affecting the health and illness of populations. It serves as the foundation and logic for interventions made in the interest of public health and preventive medicine.

Etiologic: Relating to the cause of a disease.

Evaluation: A process that attempts to determine as systematically and objectively as possible the relevance, effectiveness, and impact of activities in the light of their objectives.

Exposed Group: A group whose members have been exposed to a supposed cause of disease or health condition of interest or who possess a characteristic that is a determinant of the health outcome of interest.

False-Negative: A negative test result for a person who actually has the condition.

False-Positive: A positive test result for a person who actually does not have the condition.

Fomite: An inanimate object that can be used to transmit an infectious agent. This may be contaminated transfusion products or injections, towels or bedding, surgical instruments, or contaminated food, water, or air.

Foodborne Transmission: A type of disease transmission in which the infectious agent (which can be bacteria, parasites, viruses, fungi and their products, or toxic substances not of microbial origin) is passed on through food.

Herd Immunity: The resistance of a group to an infectious agent. This group resistance exists because a high proportion of people in the group are immune to the agent. Herd immunity is based on having a substantial number of people who are immune, which reduces the probability that they will come into contact with an infected person. By vaccinating large numbers of people in a population to protect them from smallpox, for example, health officials used herd immunity to control and eradicate the disease.

High-Risk Group: A group of persons whose risk for a particular disease, injury, or other health condition is greater than that of the rest of their community or population.

Host: A person or organism that can be infected by an agent that causes disease.

Hypothesis: A supposition arrived at from observation or reflection, that leads to testable predictions. Any assumption stated in a way that will allow it to be tested and proven incorrect.

Immunization: Introducing weakened or killed germs or toxins into the body so that the immune system will make protective antibodies that will destroy the disease-causing agent (for example, a virus) if it enters the body at a later time.

Incidence Rate: A measurement of the frequency with which a new health problem, such as an injury or case of illness, occurs in a population. In calculating incidence, the number of new cases occurring in the population during a given period of time is divided by the total population at risk during that time.

Incubation Period: The time from exposure to a disease to when the first signs or symptoms of the disease occur.

Independent Variable: A variable that may predict or cause fluctuation in an dependent variable. For example, if it is believed that age influences the frequency of delinquent behavior, age is the independent variable and the frequency of delinquent behavior is the dependent variable.

Index Case: The first case of a disease or health condition that is known to investigators. Identifying the index case can be helpful in determining the origin of a disease outbreak.

Indirect Transmission: The passing of a disease to a previously uninfected individual or group through, for example, touching a contaminated surface.

Infectivity: The ability of an infectious agent to cause infection, measured as the proportion of people who become infected after being exposed to the infectious agent.

Isolation: Limiting movement of or separating people who are ill with a contagious disease.

Line Listing: A list or spreadsheet, of cases containing demographic characteristics and other key descriptions.

Mass Screening: Large-scale screening of whole, unselected population groups.

Measure Of Association: A quantified relationship between exposure and a particular health problem.

Mean (Or Average): The sum of all the scores divided by the number of scores. The mean is sensitive to, or can be biased by, extreme scores.

Median: The middle of a distribution.

Medical Surveillance: The monitoring of potentially exposed individuals to detect early symptoms of disease.

Mode: The most frequently occurring value or score in a distribution.

Mode Of Transmission: The way or ways in which a disease is transmitted. The transmission can be direct (person-to-person) or indirect.

Molecular Epidemiology: A kind of epidemiologic investigation that uses molecular laboratory techniques to detect outbreaks.

Morbidity: Illness.

Mortality: Death.

Mortality Rate: A measure of the frequency of occurrence of death among a defined population during a specified time interval.

Natural History of Disease: The progression of a disease process in a person from the time it begins to the time it resolves, in the absence of treatment.

Outbreak: Synonymous with epidemic. Sometimes *outbreak* is the preferred word, as it avoids the sensationalism associated with the word *epidemic*. It can also mean a localized, as opposed to generalized, epidemic.

Pandemic: An epidemic occurring over a very wide area (usually multicountry) and usually affecting a large proportion of the population.

Passive Immunity: Immunity conferred by an antibody produced in another host. This type of immunity can be acquired naturally by an infant from its mother or artificially by administration of an antibody-containing preparation (antiserum or immune globulin).

Passive Surveillance: A provider-based approach to data collection, in which health departments or the Centers for Disease Control and Prevention (CDC) depend on disease reports to be submitted by laboratories, clinicians, and the public.

Pathogenicity: The ability of an agent to cause disease after infection, measured as the proportion of people who are infected by an agent and then develop the disease.

Point Source Outbreak: An outbreak that results from a exposure to the same source.

Population: A group of people, objects, observations, or scores that have something in common.

Population At Risk: The total number of inhabitants of a given area who may contract the disease of interest.

Portal of Entry: A pathway into the host that gives an agent access to tissue that will allow it to multiply or act.

Portal Of Exit: A pathway by which an agent can leave its host.

Prevalence: The proportion of people in a population who have a particular disease, chronic condition, injury, or attribute at a specified point in time or over a specified period of time.

Primary Case: A person who acquires a disease from an exposure, for example, to contaminated food.

Propagated Outbreak: An outbreak that does not have a common source, but instead spreads from person to person.

Proportion: A type of ratio in which the numerator is included in the denominator.

Quarantine: Limiting movement of or separating people who are not sick but are presumed to have been exposed to a contagious disease.

Rate: An expression of the relative frequency with which an event or condition occurs.

Reservoir: The habitat in which an infectious agent normally lives, grows, and multiplies; reservoirs include humans, animals, and the environment.

Risk Factor: An aspect of personal behavior or lifestyle, an environmental exposure, or an inborn or inherited characteristic that is associated with an increased occurrence of a disease or other health-related event or condition.

Sample: A selected subgroup of a population.

Sample Size: The size of the group being studied. "N" is used to indicate the sample size; for example, if you have a sample of 23 people, $n=23$.

Screening: The presumptive identification of unrecognized disease or defect by the application of tests, examinations, or other procedures which can be applied rapidly.

Secondary Attack Rate: A measure of the frequency of new cases of a disease among the contacts of known cases.

Secondary Case: A person who gets a disease from exposure to a person with the disease, or primary case.

Selective Screening: Screening of selected high-risk groups in the population.

Sensitivity: The proportion of persons with a disease who are correctly identified by a screening test or case definition as having that disease.

Specificity: The proportion of persons without a health condition or disease that are correctly identified as such by a screening test or case definition.

Standard Population: A population used to allow comparisons over time and among different parts of the population. By convention in the US, the standard population is the US population in the year 2000.

Statistical Significance: The degree to which a value is greater or smaller than would be expected to occur by chance.

Study Design: The methodology that is used to investigate a particular health phenomenon or exposure-disease relationship. Studies can be descriptive or analytical.

Subclinical: Without apparent symptoms.

Super-Spreader: An individual who is much more infective than most other people with the disease.

Surveillance: The collection of information on cases of disease or other conditions in a standard way to detect increases or decreases in the disease over time and differences between various geographic areas. Public health officials use the information to detect outbreaks and to plan programs to help prevent and control disease.

Symptom: Any indication of disease noticed or felt by a patient.

Syndromic Surveillance: The collection and analysis of pre-diagnosis information that lead to an estimation of the health status of the community.

Validity: The degree to which a measurement actually measures or detects what it is intended to measure.

Variable: Any measured characteristic or attribute that differs for different subjects.

Virulence: The ability of an infectious agent to cause severe disease, measured as the proportion of people with the disease who become extremely ill or die.

Glimpse of Animal Disease Surveillance & Investigation in West Bengal



Blood & sample collection from a cattle farm
(North 24 Pgs)



PM of a backyard poultry bird
(Hooghly)



Blood collection after FMD vaccination
(Hooghly)



Blood collection for disease diagnosis
(Bankura)



Burial of a dead Bull after PM (Veterolegal case)
(Paschim Midnapur)



Nasal swab collection from a kid
(Paschim Bardhaman)



Tracheal swab collection for AI surveillance
(Hooghly)



Serum collection after PPR-CP
(Hooghly)



PM of a GSD (Veterolegal case)
(Paschim Midnapur)



Investigation of unusual mortality of poultry birds
(North 24 Pgs)



Microscopical examination of blood slide
(Paschim Bardhaman)



Blood collection for AI Surveillance
(Hooghly)



Nasal swab collection from a PPR suspected kid
(Bankura)



Investigation of an road accident case
(Bankura)



PM examination of a poultry bird (Coccidiosis)
(Bankura)



Investigation of an accidental Fire Burnt case



Tracheal swab collection for AI surveillance



Collection of cloacal swab for AI surveillance
(Alipurduar)



PM of a Gangetic Dolphin
(Malda)



PM of a rabbit and sample collection for disease diagnosis (RHF)
(Coochbehar)



PM of Black soft shell turtle for disease diagnosis (TeHV-1)
(Coochbehar)



PM of Flying Bats for disease investigation
(Coochbehar)



PM of DP suspected Duck
(Coochbehar)



PM of a Gangetic Turtle for disease diagnosis
(Malda)



PM of a kid for sample collection
(Hooghly)



PM of a poultry bird for disease diagnosis
(South 24 Pgs)



PM of a horse at SVSPA, Barrackpore
(North 24 Pgs)

