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ICAR-NIVEDI



*Animal Disease Information  
e-bulletin*

*Vol. 3 Issue 17-19, March 2016 - May 2016*

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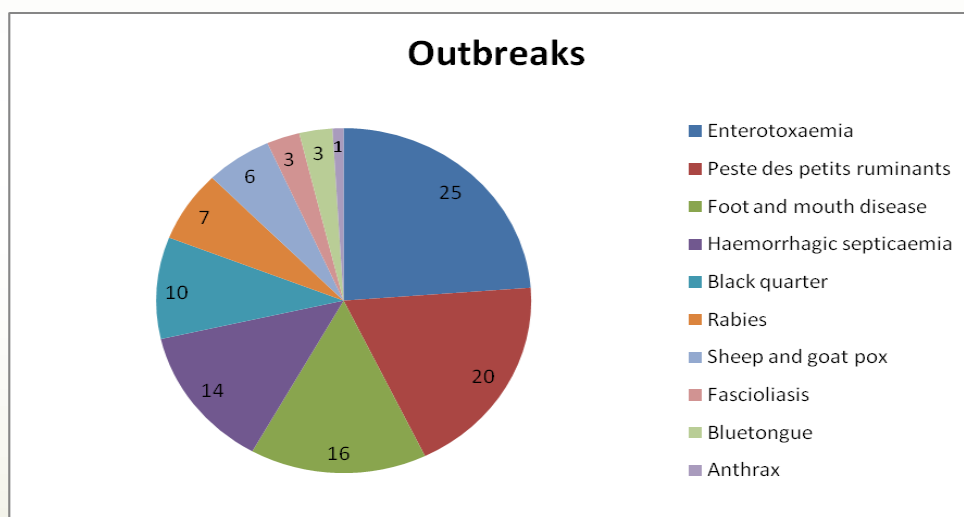
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## March 2016

The top ten diseases reported during March, 2016 are Enterotoxaemia, Peste des petits ruminants, Foot and Mouth disease, Haemorrhagic septicaemia, Black quarter, Rabies, Sheep and Goat pox, Fascioliasis, Bluetongue and Anthrax. The following Pie chart shows the top ten diseases reported during the month of March, 2016 (Fig 1).



**Fig. 1 Top ten diseases reported during March 2016**  
(Numbers in chart indicate outbreaks)

**Enterotoxaemia disease** has been recorded from two states involving three districts. Maximum number of outbreaks has been recorded in Assam state. Karnataka is the other state that reported the disease (Fig 2).

**Peste des petits ruminants disease** has been recorded from six states involving ten districts. Maximum number of outbreaks has been recorded in Karnataka state. Andhra Pradesh, Assam, Kerala, Haryana and Odisha are other states that reported the disease (Fig 3).

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**Foot and Mouth disease** has been recorded from seven states involving ten districts. Maximum number of outbreaks has been recorded in Madhya Pradesh state. Haryana, Himachal Pradesh, Karnataka, Kerala, Odisha and Uttar Pradesh are other states that reported the disease (Fig 3).

**Haemorrhagic Septicaemia disease** has been recorded from seven states involving ten districts. Maximum number of outbreaks has been recorded in Karnataka state. Assam, Goa, Haryana, Kerala, Madhya Pradesh and Odisha are the other states that reported the disease (Fig 2).

**Black quarter disease** has been recorded from three states involving seven districts. Maximum number of outbreaks has been recorded in Assam state. Bihar and Karnataka are other states that reported the disease (Fig 2).

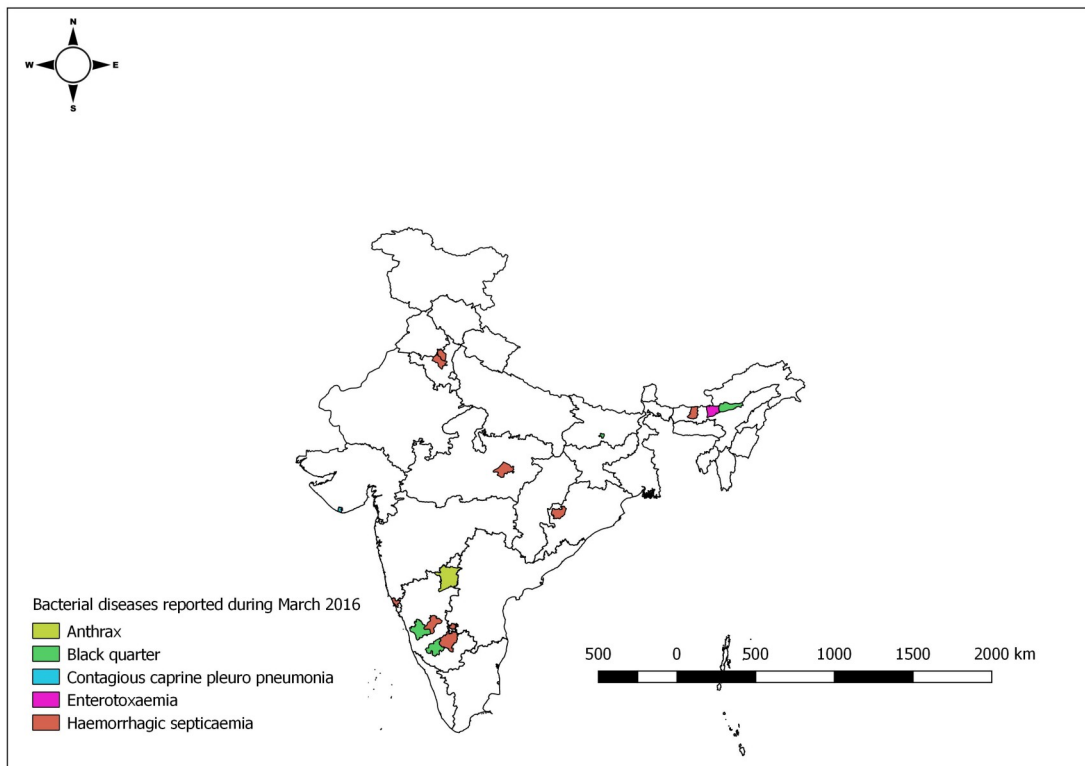
**Rabies disease** has been recorded from Kerala involving four districts (Fig 3).

**Sheep & Goat pox disease** has been recorded from two states involving four districts. There are equal number of outbreaks in both Karnataka and Jammu & Kashmir (Fig 3).

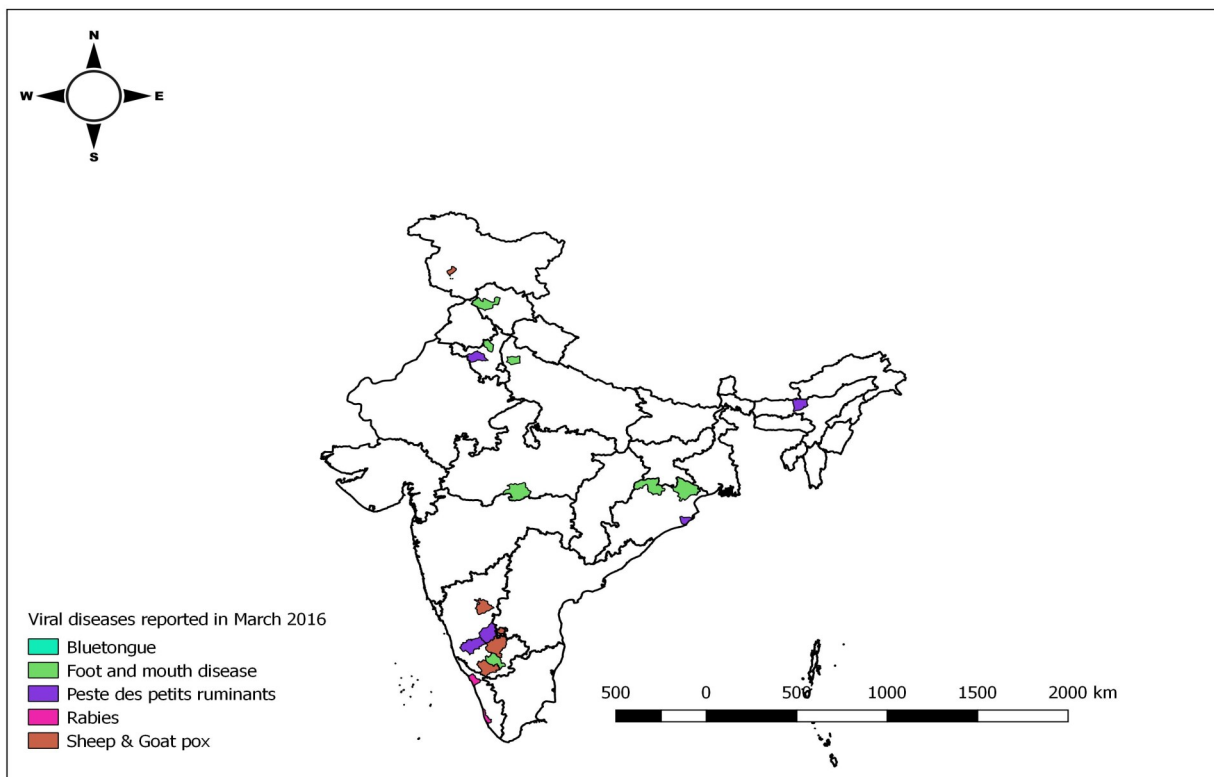
**Fascioliasis** has been recorded from Andaman and Nicobar islands involving 2 districts.

**Bluetongue disease** has been recorded from Karnataka state involving two districts (Fig 3).

**Anthrax disease** has been recorded from Karnataka state involving one district (Fig 2).



**Fig. 2 Spatial distribution of bacterial diseases reported during March 2016**



**Fig. 3 Spatial distribution of viral diseases reported during March 2016**

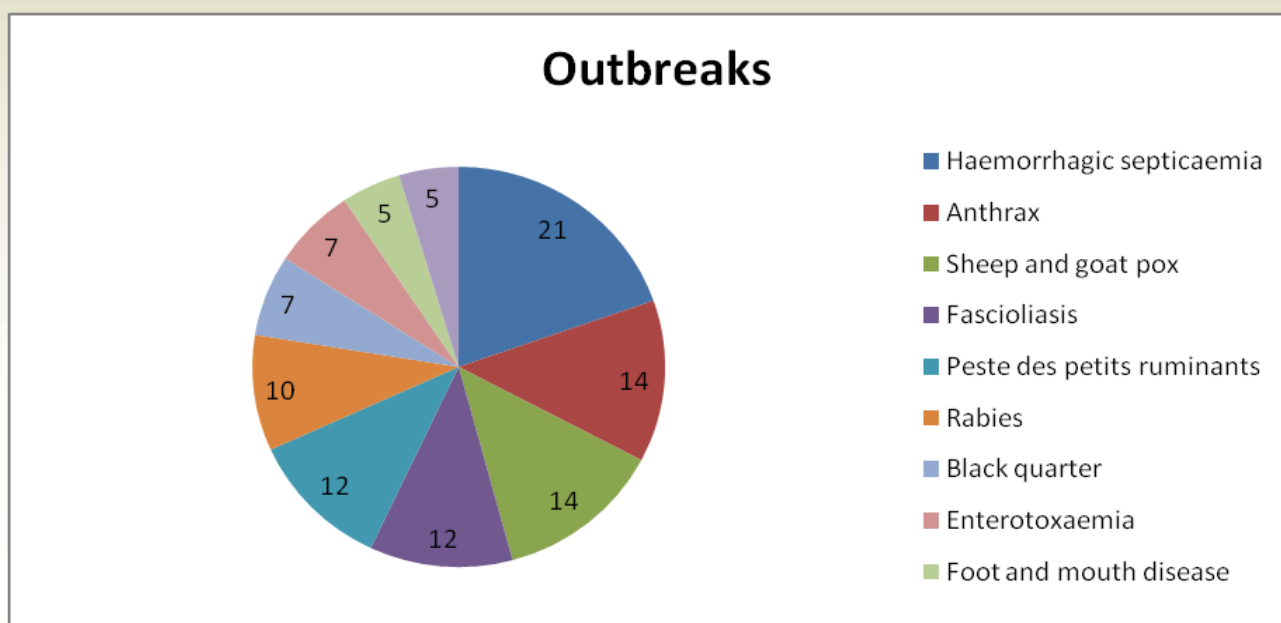
**Table.1 State wise disease reports for March, 2016**

<b>State</b>	<b>Disease Reported</b>
Andaman & Nicobar Island	Fascioliasis (Buffalo, cattle)
Andhra Pradesh	Peste des petits ruminants (Sheep)
Assam	Black quarter (Cattle); Enterotoxaemia (Goat); Haemorrhagic septicaemia (Cattle); Peste des petits ruminants (Goat)
Bihar	Black quarter (Cattle); Swine fever (pig)
Daman and Diu	Contagious caprine pleuro pneumonia (Goat)
Goa	Haemorrhagic septicaemia (Cattle)
Haryana	Foot and Mouth disease (Buffalo); Haemorrhagic septicaemia (Cattle, Buffalo); Peste des petits ruminants (Goat); Theileriosis (Cattle); Trypanosomiasis (Cattle);
Himachal Pradesh	Foot and Mouth disease (Cattle); E.coli (Poultry)
Jammu & Kashmir	Foot rot (Sheep/Goat); Sheep and Goat pox (Sheep/Goat)
Karnataka	Anthrax (Sheep); Black quarter (Cattle, Buffalo); Bluetongue (Sheep, Goat); Enterotoxaemia (Sheep, Goat); Foot and Mouth disease (Cattle, Buffalo); Haemorrhagic septicaemia (Goat, Sheep, Buffalo, Cattle); Peste des petits ruminants (Sheep, Goat); Sheep & Goat pox (Sheep)
Kerala	Foot and mouth disease (Cattle); Haemorrhagic septicaemia (Cattle); Peste des petits ruminants (Goat); Rabies (Cattle, Canine)
Madhya Pradesh	Foot and Mouth disease (Buffalo, Cattle); Haemorrhagic septicaemia (Cattle)
Odisha	Foot and mouth disease (Cattle); Haemorrhagic septicaemia (Cattle); Peste des petits ruminants (Goat)
Puducherry	Babesiosis (Cattle)
Uttar Pradesh	Foot and mouth disease (Goat)

**Note:** \* The livestock species in the bracket indicates the occurrence of the disease in those species of livestock during the reporting month in respective states

## April 2016

The top ten diseases reported during April, 2016 are Haemorrhagic septicaemia, Anthrax, Sheep and Goat pox, Fascioliasis, Peste des petits ruminants, Rabies, Black quarter, Enterotoxaemia, Foot and Mouth disease and Swine fever. The following Pie chart shows the top ten diseases reported during the month of April, 2016 (Fig 4).



**Fig. 4 Top ten diseases reported during April 2016**  
(Numbers in chart indicate outbreaks)

**Haemorrhagic Septicaemia disease** has been recorded from six states involving twelve districts. Maximum number of outbreaks has been recorded in Nagaland state. Assam, Karnataka, Kerala, Madhya Pradesh and Punjab are the other states that reported the disease (Fig 5).

**Anthrax disease** has been recorded from five states involving nine districts. Maximum number of outbreaks has been recorded in Odisha state. Karnataka, Kerala, Madhya Pradesh and Maharashtra are the other states that reported the disease (Fig 5).

**Sheep and Goat pox disease** has been recorded from four states involving nine districts. Maximum number of outbreaks has been recorded in Karnataka state. Andhra Pradesh, Jammu and Kashmir and Manipur are other states that reported the disease (Fig 6).

**Fascioliasis disease** has been recorded from three states involving three districts. Maximum number of outbreaks has been recorded in Assam state. Manipur and Puducherry are the other places that reported the disease.

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**Peste des petits ruminants disease** has been recorded from five states involving eight districts. Maximum number of outbreaks has been recorded in Karnataka state. Assam, Kerala, Madhya Pradesh and Punjab are the other states that reported the disease (Fig 6).

**Rabies disease** has been recorded from Kerala involving three districts (Fig 6).

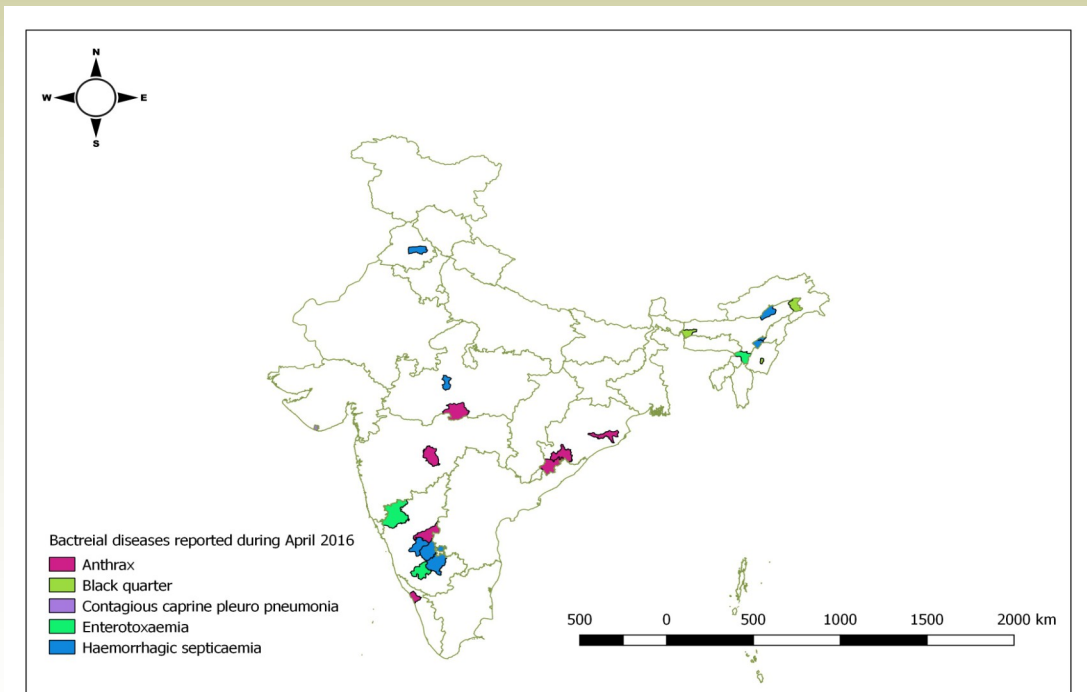
**Black quarter disease** has been recorded from two states involving three districts. Maximum number of outbreaks has been recorded in Assam. Manipur is the other state that reported the disease (Fig 5).

**Enterotoxaemia disease** has been recorded from two states involving four districts. Maximum outbreaks has been recorded in Karnataka state. Assam is the other state that reported the disease (Fig 5).

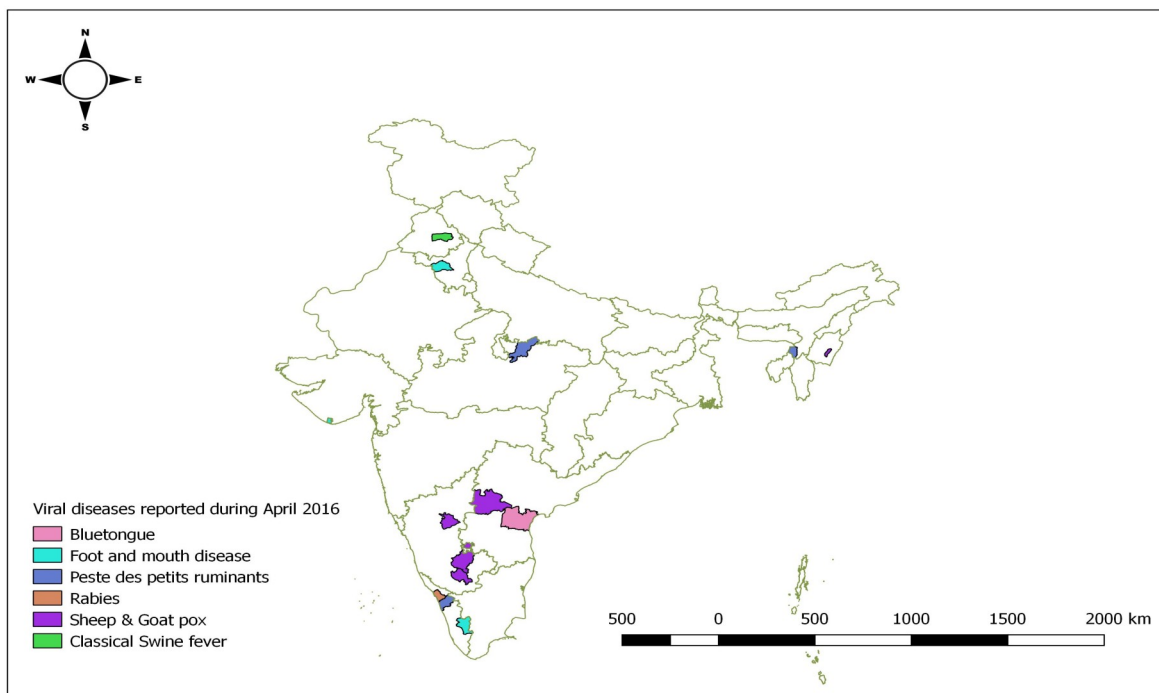
**Foot and mouth disease** has been recorded from two states and one Union Territory involving four districts. Diu & Daman and Kerala has reported equal number of outbreaks. Haryana is the other state that reported the disease (Fig 6).

**Swine fever disease** has been recorded from two states involving two districts. Maximum outbreaks has been recorded in Assam state. Punjab is the other state that reported the disease (Fig 6).

**Note:** \* The livestock species in the bracket indicates the occurrence of the disease in those species of livestock during the reporting month in respective states



**Fig. 5 Spatial distribution of Bacterial diseases reported during April 2016**



**Fig. 6 Spatial distribution of Viral diseases reported during April 2016**

**Table.2 State wise disease reports for April, 2016**

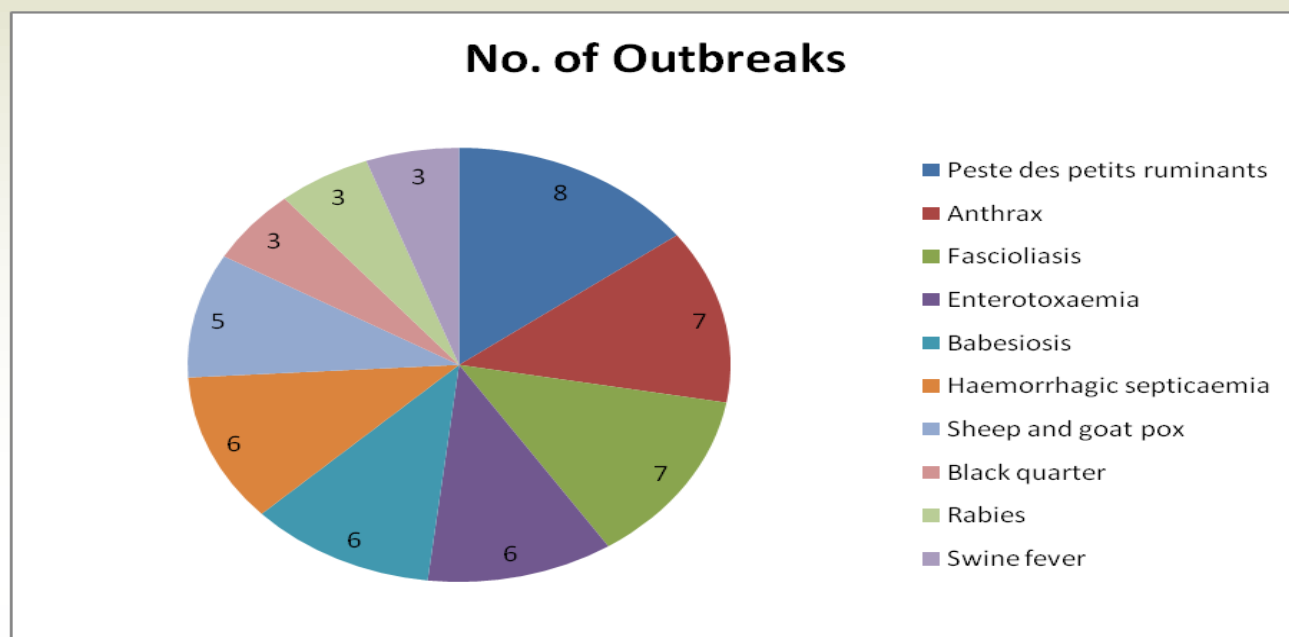
<b>State</b>	<b>Diseases reported</b>
Andaman and Nicobar Islands	Anthrax (sheep)
Andhra Pradesh	Bluetongue (Sheep), Sheep and Goat pox (Sheep)
Assam	Black quarter (cattle), Fascioliasis (Cattle), Hemorrhagic septicemia (Cattle), Peste des petits ruminants (Goat), Swine Fever (Pig), Theileriosis (Cattle), Enterotoxaemia (Goat)
Dadra and Nagar Haveli	Anthrax (Cattle)
Daman and Diu	Contagious caprine pleuro pneumonia (Goat), Foot and Mouth disease (Cattle, Buffalo)
Goa	Sheep and Goat pox (Goat)
Haryana	Foot and Mouth disease (Cattle and Pig)
Jammu & Kashmir	Sheep and Goat pox (Sheep/Goat)
Karnataka	Enterotoxaemia (Sheep, Goat), Anthrax (Sheep, Cattle), Hemorrhagic septicemia (Sheep, Cattle, Goat), Peste des petits ruminants (Sheep, Goat), Sheep and Goat pox (Sheep, Goat)
Kerala	Anthrax (Cattle), Foot and Mouth disease (Cattle), Hemorrhagic septicemia (Cattle), Peste des petits ruminants (Goat), Rabies (Canine, Cattle)
Madhya Pradesh	Anthrax (Cattle), Haemorrhagic septicaemia (Goat), Peste des petits ruminants (Goat)
Maharashtra	Anthrax (sheep)
Manipur	Black quarter (Cattle), Fascioliasis (Cattle), Sheep and Goat pox (Goat)
Nagaland	Haemorrhagic septicaemia (Cattle, Buffalo)
Odisha	Anthrax (Goat, Pig, Cattle)
Puducherry	Fascioliasis (Cattle)
Punjab	Haemorrhagic septicaemia (Cattle), Peste des petits ruminants (Goat), Swine fever (Pig)

**Note:** \* The livestock species in the bracket indicates the occurrence of the disease in those species of livestock during the reporting month in respective states



## May 2016

The top ten diseases reported during May, 2016 are Peste des petits ruminants, Anthrax, Fascioliasis, Enterotoxaemia, Babesiosis, Haemorrhagic septicaemia, Sheep and Goat pox, Black quarter, Rabies and Swine fever. The following Pie chart shows the top ten diseases reported during the month of May, 2016 (Fig 7).



**Fig. 7 Top ten diseases reported during May 2016**  
(Numbers in chart indicate outbreaks)

**Peste des petits ruminants disease** has been recorded from three states involving four districts. Maximum number of outbreaks has been recorded in Rajasthan state. Karnataka and Assam are the other states that reported the disease (Fig 9).

**Anthrax disease** has been recorded from two states involving three districts. Maximum number of outbreaks has been recorded in Karnataka state. Andhra Pradesh is the other state that reported the disease (Fig 8).

**Fascioliasis disease** has been recorded from two states and one Union Territory involving five districts. Manipur and Puducherry has reported equal number of outbreaks. Assam is the other state that reported the disease.

**Enterotoxaemia disease** has been recorded from two states involving four districts. Maximum outbreaks has been recorded in Karnataka state. Assam is the other state that reported the disease (Fig 8).

**Babesiosis disease** has been recorded from Puducherry Union Territory (Fig 8).

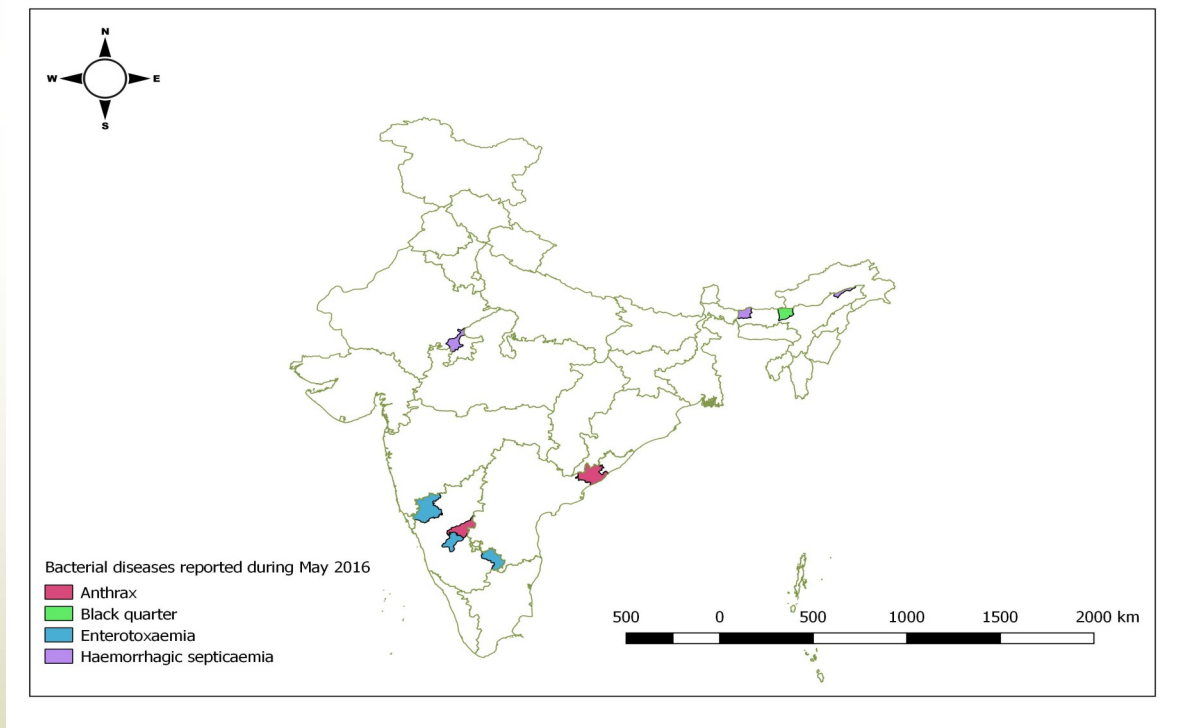
**Haemorrhagic Septicaemia disease** has been recorded from two states involving four districts. Maximum number of outbreaks has been recorded in Assam state. Rajasthan is the other state that reported the disease (Fig 8).

**Sheep and Goat pox disease** has been recorded from two states involving five districts. Maximum number of outbreaks has been recorded in Jammu and Kashmir state. Assam is the other state that reported the disease (Fig 9).

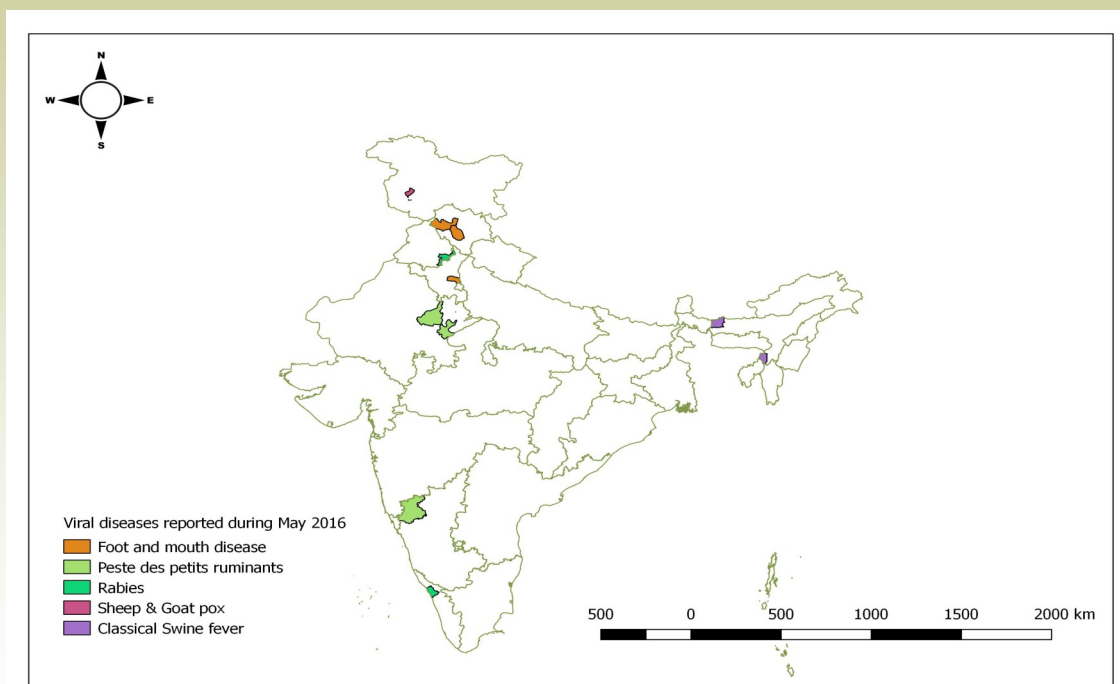
**Black quarter disease** has been recorded from Assam involving three districts (Fig 8).

**Rabies disease** has been recorded from two states involving three districts. Maximum outbreaks has been recorded in Kerala state. Punjab is the other state that reported the disease (Fig 9).

**Swine fever disease** has been recorded from Assam involving three districts (Fig 9).



**Fig. 8 Spatial distribution of Bacterial diseases reported during May 2016**



**Fig. 9 Spatial distribution of Viral diseases reported during May 2016**

**Table.3 State wise disease reports for May, 2016**

State	Diseases reported
Andhra Pradesh	Anthrax (Cattle, Sheep)
Assam	Black quarter (Cattle), Enterotoxaemia (Goat), Fascioliasis (Cattle), Haemorrhagic septicaemia (Cattle), Sheep and Goat pox (Goat), Swine fever (Pig), Peste des petits ruminants (Goat)
Haryana	Foot and Mouth disease (Cattle)
Himachal Pradesh	Foot and Mouth disease (Cattle)
Jammu & Kashmir	Sheep and Goat pox (Sheep/Goat)
Karnataka	Peste des petits ruminants (Sheep, Goat), Anthrax (Sheep), Enterotoxaemia (Sheep, Goat)
Kerala	Rabies (cattle)
Manipur	Fascioliasis (Cattle)
Puducherry	Fascioliasis (Cattle), Babesiosis (Sheep)
Punjab	Rabies (Buffalo), Theileriosis (Cattle)
Rajasthan	Peste des petits ruminants (Goat), Haemorrhagic septicaemia (Cattle, Buffalo)

**Note:** \* The livestock species in the bracket indicates the occurrence of the disease in those species of livestock during the reporting month in respective states

## News

### **March 2016**

#### **Sattari woman dies of monkey fever:**

11 March 2016: A 50-year-old woman, who had been suffering from Kyasanur forest disease or monkey fever, died on Wednesday evening at the Goa Medical College, Bambolim. This is the third death linked to KFD, this year. On March 2, Jayashree Gaonkar from Mauxi village was admitted to the community health centre, Valpoi, and she was diagnosed of monkey fever by a Manipal virology team. Since the last year the Kyasanur forest disease has claim seven lives; this year till now three women passed away due to KFD.

Though all the seven people had KFD symptoms, the state government has maintained that these deaths in Sattari taluk are not entirely due to the Kyasanur forest disease (<http://www.navhindtimes.in/another-sattari-woman-dies-of-monkey-fever/>).

#### **Crimean-Congo hemorrhagic fever (CCHF) case reported from Ahmedabad hospital:**

17 March 2016: A fresh case of Crimean-Congo hemorrhagic fever has been reported from Ahmedabad Municipal Corporation-run VS Hospital. A 26-year-old farmer from Dhandhuka was admitted to VS Hospital on March 12 with complaints of fever, headache and myalgia for the last one month. Later, his blood samples were sent to the National Institute of Virology (NIV), Pune. According to the NIV report, he was tested positive for CCHF infection. The farmer had been infected by the virus in the past too. The civic body's health department officials so far have reported 3-4 cases of the CCHF virus infection this year (ECTAD\*, Vol. 05, No. 12, 24 March 2016).

#### **Second suspected anthrax outbreak within a week caused hospitalization of at least 13 people in Jharkhand**

30 March 2016: Second outbreak of anthrax within a week is suspected which caused hospitalization of at least thirteen people who probably consumed meat of dead or diseased animals in Simdega in Jharkhand. This is located about 30 km away from Kurumdegi where one person was died of anthrax four days ago. An investigation report by the Jharkhand Integrated Disease Surveillance Programme (IDSP) said the villagers developed symptoms of suspected anthrax within 48 hours of consuming the meat (ECTAD\*, Vol. 05, No. 13, 31 March 2016).

#### **Indian Poultry Products Banned from Kuwait Over Bird Flu Fears**

10 March 2016: An outbreak of H5N1 avian flu in Tripura state in January led to the culling of thousands of birds, the Business Standard reported. Reports suggest avian flu was also found in the neighbouring state of Mizoram. India's exports of poultry mainly go to the Middle East, and although Kuwait makes up a small proportion of this, decisions by other countries in the region to follow the same policy could have big impacts on India's poultry industry (<http://www.thepoultrysite.com/poultrynews/36706/indian-poultry-products-banned-from-kuwait-over-bird-flu-fears/>).

## **April 2016**

### **10 animals dead as anthrax returns to Maharashtra:**

7 April 2016: Anthrax has made a comeback in Maharashtra after five years, with officials saying that at least 10 sheep and goats in Parbhani district have died because of the disease. Locals, however, claim the toll could be as high as 150.

Anthrax is caused by the bacterium *Bacillus anthracis*. Most forms of the disease are lethal, and it affects most animals. Humans can become infected through contact with an infected animal, by inhaling spores or consuming infected meat (<http://indianexpress.com/article/cities/pune/10-animals-dead-as-anthrax-returns-to-Maharashtra/>)

### **Rabid dogs bite 16 residents in Chennai**

9 April 2016: About 16 residents have been bitten by rabid dogs in Virugambakkam. A six-year-old girl who was attacked by a stray dog has undergone a surgery and has been given anti-rabies injections at Child Trust Hospital (ECTAD\*, Vol. 05, No. 15, 14 April 2016).

### **Guntur hospital suspects first case of 'Mad Cow Disease' in Andhra**

20 April 2016: The doctors at the Government General Hospital (GGH) in Guntur have suspected Bovine spongiform encephalopathy (BSE), the ever first case in a 30-year-old woman from Ipurupalem village, near Chirala in Andhra Pradesh. While the origin of the disease remains unknown, the diagnosis is based only on the symptoms as a brain biopsy is unethical in India (ECTAD\*, Vol. 05, No. 16, 21 April 2016).

### **Mysterious disease is killing buffaloes in Peren, Nagaland**

21 April 2016: A 'mysterious' fatal bovine disease have been reported by that has already claimed death of hundreds of buffaloes in Lamha-Dunki village in Peren district. The report claimed that the animal die within days after being attacked by the 'dreaded' disease (ECTAD\*, Vol. 05, No. 16, 21 April 2016).

## **May 2016**

### **India soon will be FMD Free country**

5 May 2016: There were 2270 places during the 2005 where FMD outbreaks were reported in India. This number has reduced to just 109 in 2015 which suggested that India will be free from FMD soon. Indian Council of Agricultural Research (ICAR) has estimated the annual loss of milk and meat due to FMD to the tune of 20 thousand crores. The Agriculture Minister (Radha Mohan Singh) has assured the Parliamentary Consultative Committee of the Ministry of Agriculture to achieve the goal of FMD Freedom soon (ECTAD\*, Vol. 05, No. 19, 12 May 2016).

### **Mizoram bans Import of livestock from Bangladesh due to PRRS**

9 May 2016: The district administration of Mamit located on the Mizoram-Bangladesh border has imposed ban on import of chicken, bird, duck and eggs from Bangladesh and supply from Tripura due to outbreak of Porcine Reproductive and Respiratory Syndrome (PRRS) that probably killed pigs in Champhai district located on the Mizoram-Myanmar border (ECTAD\*, Vol. 05, No. 19, 12 May 2016).

### **Deer death toll in Delhi Zoo mounts**

14 May 2016: The number of spotted deer deaths in Delhi zoo (National Zoological Park, Delhi) this year could be as high as 46. Delhi zoo authorities, however, maintained their stated position of 16 spotted deer deaths – 13 prima facie tested positive for rabies and the reason for the death of the other three is yet to be ascertained (ECTAD\*, Vol. 05, No. 20, 19 May 2016)

### **An elephant was found dead under mysterious circumstances in Mayurbhanj district**

19 May 2016: The carcass of the male elephant, aged about eight, was spotted in Tungudu reserve forest near Judia village under Bisoi range. No injury mark was spotted and the tusks were intact. Blood samples have been sent to Animals Disease Research Institute (ADRI) in Cuttack for investigation and to ascertain the cause of death of elephant (ECTAD\*, Vol. 05, No. 20, 19 May 2016)

**Ref:** \* The news was taken from ECTAD South Asia Weekly Animal Disease E-Information at <http://www.saarc-rsu-hped.org/weekly-e-info>

## **Epidemiology Concept**

### **Infectivity, Virulence and Pathogenicity**

#### ***Infectivity***

**Qualitative definition:** Measure of the ability of a disease agent to establish itself in the host.

**Quantitative definition:** The individual dose or numbers of the agent required to infect 50% of a specified population of susceptible animals under controlled environmental condition. Attempts to quantify infectivity normally involve the use of a statistic known as ID<sub>50</sub>.

$$ID_{50} = \frac{\text{percent infected below 50\%}}{\text{percent infected above 50\%} - \text{percent infected below 50\%}}$$

## **Virulence**

**Qualitative definition:** Measure of the severity of a disease caused by a specified agent. In its strict sense, virulence is a laboratory term and is used to measure the varying ability of disease agents to produce disease under controlled conditions.

**Quantitative definition:** It is quantified by a statistic known as LD<sub>50</sub> which refers to the individual dose or numbers of the agent which will kill 50% of a specified population of susceptible animals under controlled environmental conditions.

$$LD_{50} = LD_{100} - \sum (a * b) / n$$

n = total number of animal in a group. a = the difference between two successive doses of administered extract/substance.

b = the average number of dead animals in two successive doses.

LD100 = Lethal dose causing the 100% death of all test animals

**Pathogenicity** is an epidemiological term used to describe the ability of a particular disease agent of known virulence to produce disease in a range of hosts under a range of environmental conditions.

## **Answers for crossword mentioned in Vol. 3 Issue 14-16, Dec 2015 –Feb 2016**

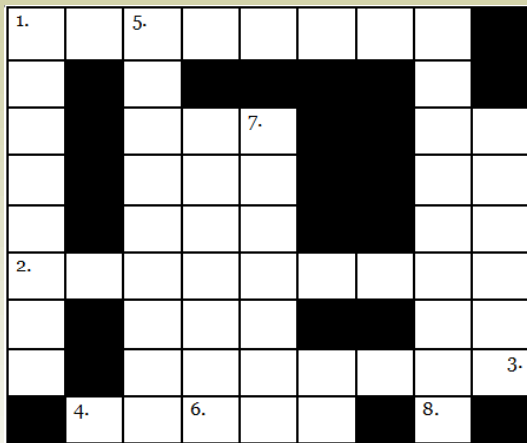
### **Across:**

1. Vector; 3. OIE; 4. Agent; 6.ET; 7. Bias; 8. Bimodal; 10. Efficacy

### **Down:**

1. Variable; 2. Case; 3. Outlier; 5. Trial; 10. CSF

## Epidemiology Cross Word Puzzle



### Across:

1. The process of selecting units from a population of interest (8).
2. A measure of association which quantifies the relationship between an exposure and health outcome from a comparative study (9)
3. A bivariate graphical display of the values of a numerical variable in the categories of a categorical variable (7-inverted)
4. Errors that occur when null hypothesis is rejected when it is true (5)

### Down:

1. A combination of symptoms characteristic of a disease or health condition (8)
3. The process of removing tissue to examine it for medical reasons (6-inverted)
5. Any departure, subjective or objective, from a state of physiological or psychological well-being (9)
6. A discrete frequency distribution which gives the probability of a number of independent events occurring in a fixed time (7-inverted)
7. Rules followed to group continuous variables into categories using Statistical Analysis System software is called \_\_\_ (7)
8. The binary logistic model used to estimate the probability of a binary response based on one or more predictor (or independent) variables (features) is \_\_\_ regression model (8- inverted)

**Note:** The solved epidemiology cross word puzzle of this issue will be published in next issue of Epi.NET.India

**Source of the data:** The data for the **EpiNET.India** was obtained from the database of National Animal Disease Referral Expert System (NADRES), ICAR-NIVEDI. Any reproduction or representation of the data from this e-bulletin should be done only with prior permission from Director, ICAR-NIVEDI.

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