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December 2015

The top ten diseases reported during December, 2015 are Foot and mouth disease, Bluetongue, Hemorrhagic septicemia, Black quarter, Peste des petits ruminants, Fascioliasis, Sheep & Goat pox, Babesiosis, Anthrax and Rabies. The following Pie chart shows the top ten diseases reported during the month of December, 2015 (Fig. 1).

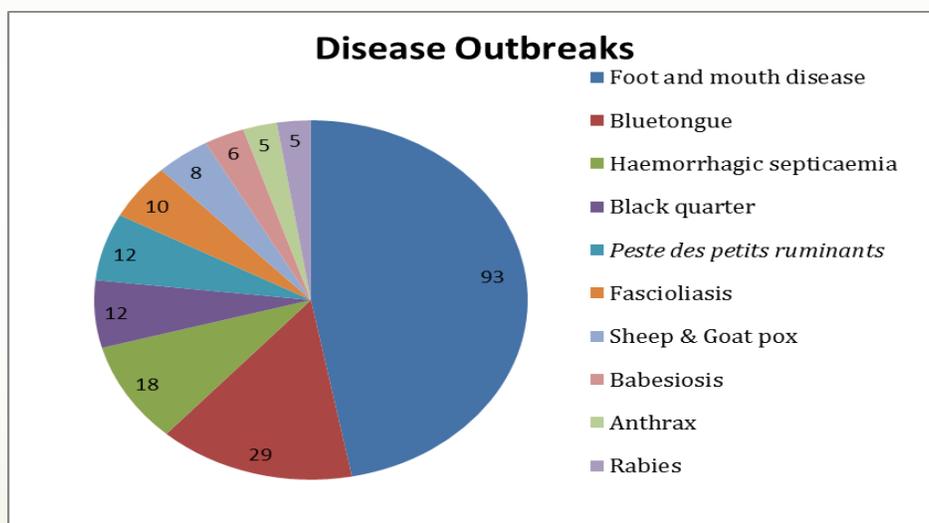


Fig. 1 Top ten diseases reported during December 2015
(Numbers in chart indicate outbreaks)

Foot and mouth disease has been recorded from eight states involving twenty five districts. Maximum number of outbreaks has been recorded in Rajasthan state. Arunachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Manipur, Meghalaya and Odisha are other states that reported the disease (Fig. 2).

Bluetongue disease has been recorded from three states involving ten districts. Maximum number of outbreaks has been recorded in Karnataka state. Andhra Pradesh and Tamil Nadu are other states that reported the disease (Fig. 2).

Hemorrhagic septicemia disease has been recorded from six states involving twelve districts. Maximum number of outbreaks has been recorded in Karnataka state. Andhra Pradesh, Himachal Pradesh, Kerala, Meghalaya and Rajasthan are other states that reported the disease (Fig. 2).

Black quarter disease has been recorded from Karnataka state involving six districts (Fig. 2).

***Peste des petits ruminants* disease** has been recorded from seven states involving nine districts. Maximum number of outbreaks has been recorded in Karnataka state. Bihar, Haryana, Kerala, Maharashtra, Tamil Nadu and Uttar Pradesh are other states that reported the disease (Fig. 2).

Fascioliasis disease has been recorded from one state and one union territory involving four districts. Maximum number of outbreaks has been recorded in Andaman and Nicobar Island state. Pondicherry is other that reported the disease (Fig. 2).

Sheep & Goat pox disease has been recorded from three states involving seven districts. Maximum number of outbreaks has been recorded in Jammu & Kashmir state. Karnataka and Tamil Nadu are other states that reported the disease (Fig. 2).

Babesiosis disease has been recorded from Pondicherry union territory involving two districts (Fig. 2).

Anthrax disease has been recorded from two states involving five districts. Maximum number of outbreaks has been recorded in Karnataka state. Tamil Nadu is other state that reported the disease (Fig. 2).

Rabies disease has been recorded from Kerala state involving three districts (Fig. 2).

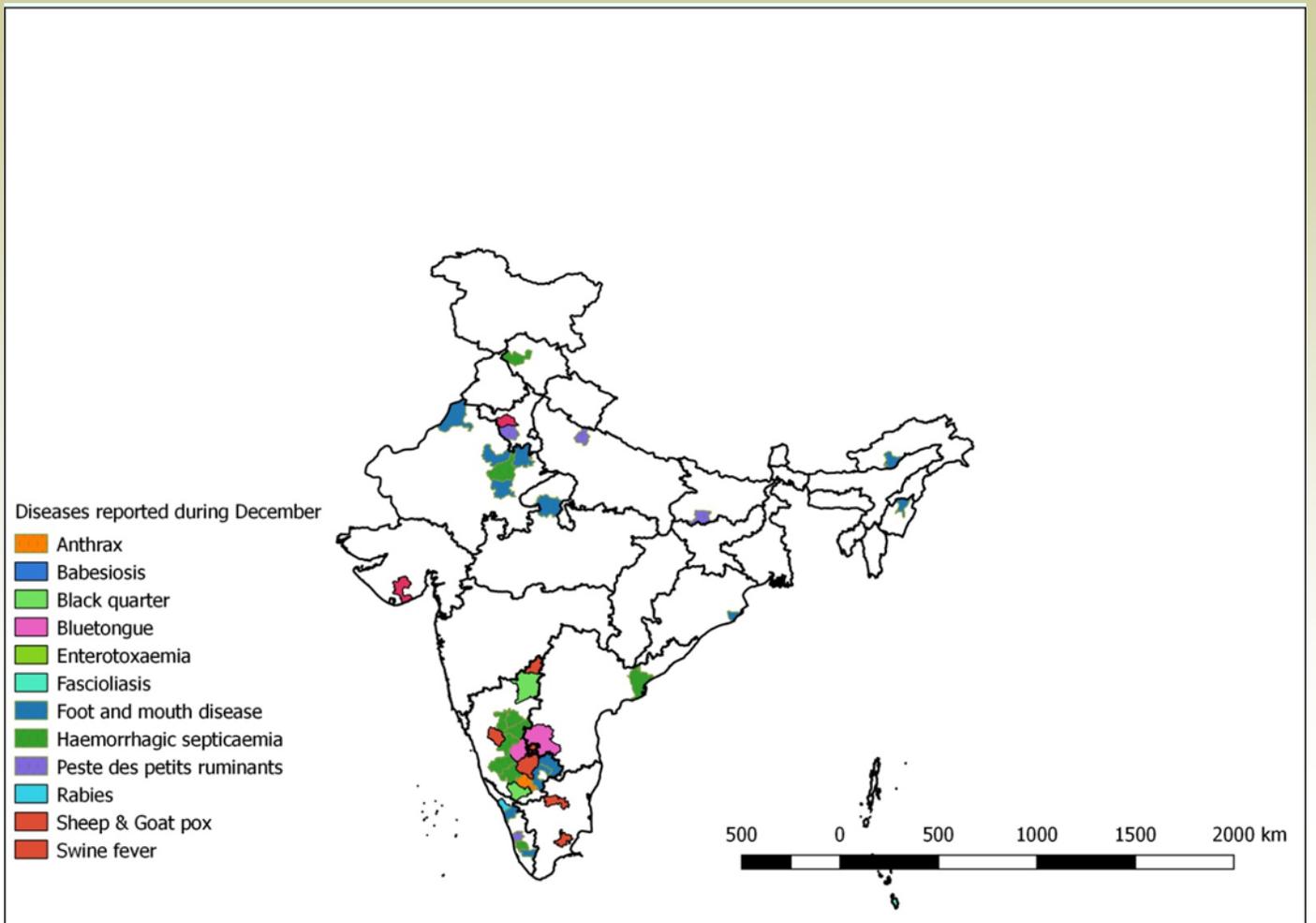


Fig. 2 Spatial distribution of diseases reported during December 2015

Table.1 State wise disease reports for December, 2015

State	Diseases Reported*
Andaman & Nicobar Island	Fascioliasis (Buffalo, Cattle, Goat)
Andhra Pradesh	Bluetongue (Sheep), Haemorrhagic septicaemia (Cattle)
Arunachal Pradesh	Foot and mouth disease (Cattle)
Bihar	<i>Peste des petits ruminants</i> (Goat)
Gujarat	Theileriosis (Cattle, Buffalo)
Haryana	<i>Peste des petits ruminants</i> (Sheep, Goat), Theileriosis (Cattle)
Himachal Pradesh	Haemorrhagic septicaemia (Cattle)
Jammu & Kashmir	Sheep & Goat pox (Sheep, Goat)
Karnataka	Anthrax (Sheep, Cattle), Black quarter (Cattle, sheep), Bluetongue (Goat, Sheep), Enterotoxaemia (Goat, Sheep), Foot and mouth disease (Cattle), Haemorrhagic septicaemia (Buffalo, Cattle, Goat, Sheep), <i>Peste des petits ruminants</i> (Goat, Sheep) Sheep & Goat pox (Sheep, Goat) Swine fever (Pig)
Kerala	Foot and mouth disease (Cattle, Goat, Pig), Haemorrhagic septicaemia (Cattle, Pig), <i>Peste des petits ruminants</i> (Goat), Rabies (Canine, Cattle)
Madhya Pradesh	Foot and mouth disease (Buffalo, Cattle)
Maharashtra	<i>Peste des petits ruminants</i> (Goat)
Manipur	Foot and mouth disease (Cattle)
Meghalaya	Foot and mouth disease (Cattle), Haemorrhagic septicaemia (Cattle)
Odisha	Foot and mouth disease (Cattle)
Puducherry	Babesiosis (Canine, Cattle), Fascioliasis (Cattle)
Rajasthan	Foot and mouth disease (Buffalo, Cattle, Goat, Sheep), Haemorrhagic septicaemia (Buffalo, Cattle)
Tamil Nadu	Anthrax (Cattle), Bluetongue (Sheep), <i>Peste des petits ruminants</i> (Goat), Sheep & Goat pox (Sheep)
Uttar Pradesh	<i>Peste des petits ruminants</i> (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

January 2016

The top ten diseases reported during January 2016 are Foot and mouth disease, Bluetongue, *Peste des petits ruminants*, Anthrax, Sheep and Goat pox, Babesiosis, Black quarter, Enterotoxaemia, Haemorrhagic septicaemia and Fascioliasis. The following Pie chart shows the top ten diseases reported during the month of January, 2016 (Fig.3).

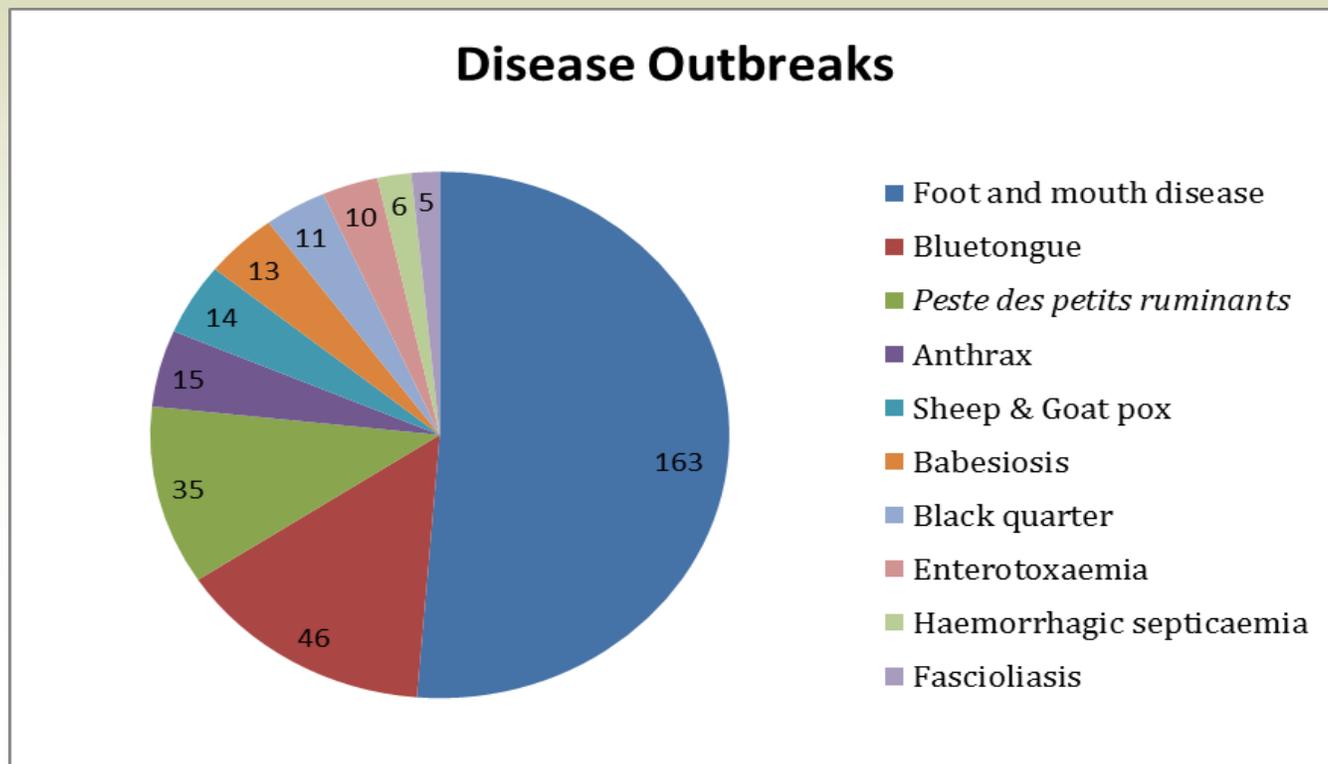


Fig. 3 Top ten diseases reported during January 2016
(Numbers in chart indicate outbreaks)

Foot and mouth disease is reported in 8 states and 1 union territory involving 29 districts. Maximum number of outbreaks has been recorded in Kerala state. Karnataka, Madhya Pradesh, Bihar, West Bengal, Haryana, Odisha, Tamil Nadu and Daman and Diu (Fig. 4).

Bluetongue disease has been recorded from two states involving fourteen districts. Maximum number of outbreaks has been recorded in Karnataka state. Tamil Nadu is another state that reported the disease (Fig. 4).

***Peste des petits ruminants* disease** has been recorded from ten states involving twenty one districts. Maximum number of outbreaks has been recorded in West Bengal state. Bihar, Haryana, Kerala, Andhra Pradesh, Tamil Nadu, Madhya Pradesh, Odisha, Karnataka and Uttar Pradesh are other states that reported the disease (Fig. 4).

Anthrax disease has been recorded from three states involving six districts. Maximum number of outbreaks has been recorded in Karnataka state. Tamil Nadu and Andhra Pradesh are the other states that reported the disease (Fig. 4).

Sheep & Goat pox disease has been recorded from four states involving ten districts. Maximum number of outbreaks has been recorded in Jammu & Kashmir state. Karnataka, West Bengal and Tamil Nadu are other states that reported the disease (Fig. 4).

Babesiosis disease has been recorded from 1 state and 1 union territory involving three districts. Maximum number of outbreaks is seen in Puducherry. Kerala is the other place that reported the disease (Fig. 4).

Black quarter disease has been recorded from two states involving five districts. Maximum number of outbreaks has been recorded in Karnataka state. Odisha is the other state that reported the disease (Fig. 4).

Enterotoxaemia disease has been recorded maximum from Karnataka state involving four districts. (Fig. 4).

Hemorrhagic septicemia disease has been recorded from Karnataka state involving four districts (Fig. 4).

Fascioliasis disease has been recorded from Assam state involving four districts (Fig. 4).

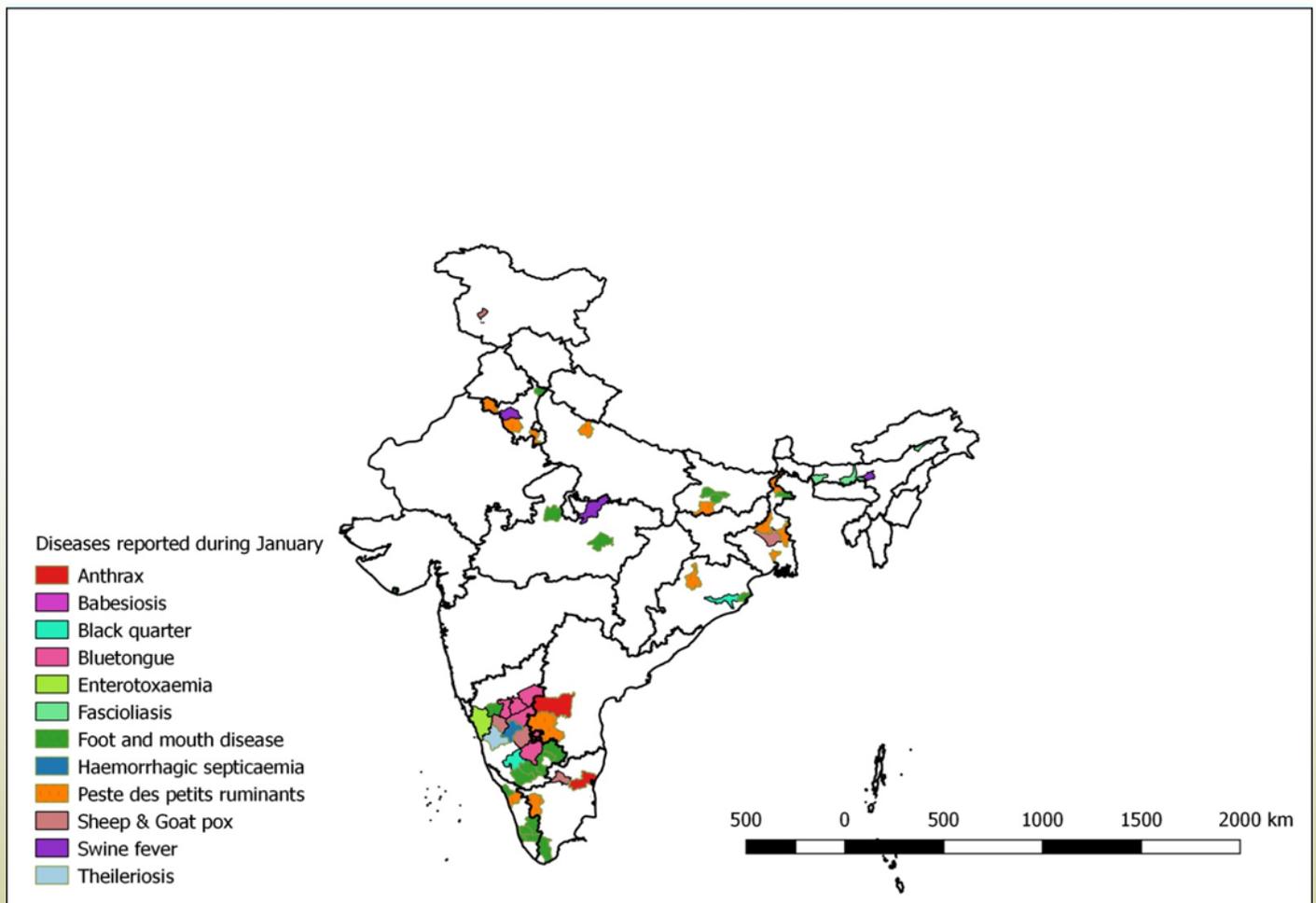


Fig. 4 Spatial distribution of diseases reported during January 2016

Table.2 State wise disease report for January 2016

State	Diseases Reported*
Andhra Pradesh	Anthrax (Sheep), <i>Peste des petits ruminants</i> (Sheep)
Assam	Fascioliasis (Cattle, Goat), Swine fever (Pig)
Bihar	Foot and mouth disease (Buffalo, Cattle), <i>Peste des petits ruminants</i> (Goat)
Daman and Diu	Foot and mouth disease (Buffalo, Cattle)
Haryana	Foot and mouth disease (Buffalo), <i>Peste des petits ruminants</i> (Goat, Sheep), Swine fever (Pig)
Jammu & Kashmir	Sheep & Goat pox (Sheep, Goat)
Karnataka	Anthrax (Buffalo, Sheep, Cattle, Goat), Black quarter (Buffalo, Cattle, Sheep), Bluetongue (Goat, Sheep), Enterotoxaemia (Sheep, Goat), Foot and mouth disease (Buffalo, Cattle), Haemorrhagic septicaemia (Sheep, Goat, Pig), <i>Peste des petits ruminants</i> (Cattle, Sheep, Goat), Sheep & Goat pox (Sheep), Theileriosis (Sheep)
Kerala	Babesiosis (Canine), Foot and mouth disease (Cattle), <i>Peste des petits ruminants</i> (Goat)
Madhya Pradesh	Foot and mouth disease (Cattle, Buffalo), <i>Peste des petits ruminants</i> (Goat), Swine fever (Pig)
Odisha	Black quarter (Cattle), Foot and mouth disease (Cattle), <i>Peste des petits ruminants</i> (Goat)
Puducherry	Babesiosis (Canine, Cattle)
Tamil Nadu	Anthrax (Cattle), Bluetongue (Sheep), Foot and mouth disease (Sheep), <i>Peste des petits ruminants</i> (Sheep), Sheep & Goat pox (Sheep)
Uttar Pradesh	<i>Peste des petits ruminants</i> (Goat)
West Bengal	Foot and mouth disease (Cattle), <i>Peste des petits ruminants</i> (Goat), Sheep & Goat pox (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

February 2016

The top ten diseases reported during February 2016 are Bluetongue, Fascioliasis, Foot and mouth disease, Sheep and Goat pox, Black quarter, *Peste des petits ruminants*, Haemorrhagic septicaemia, Enterotoxaemia, Anthrax, Swine Fever. The following Pie chart shows the top ten diseases reported during the month of February 2016 (Fig. 5).

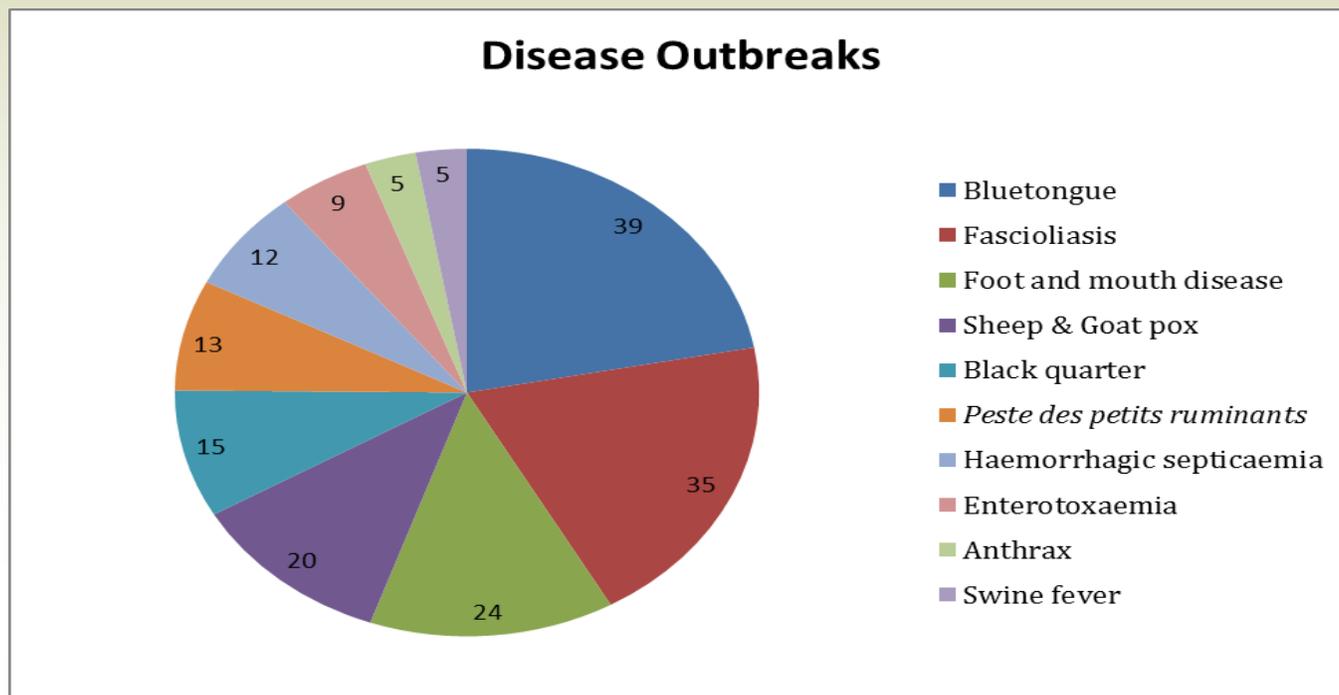


Fig. 5 Top ten diseases reported during February 2016
(Numbers in chart indicate outbreaks)

Bluetongue disease has been recorded from two states involving thirteen districts. Maximum number of outbreaks has been recorded in Karnataka state. Andhra Pradesh is the other state that reported the disease (Fig. 6).

Fascioliasis disease has been recorded from Puducherry union territory involving one district (Fig. 6).

Foot and mouth disease has been recorded from three states and one union territory involving thirteen districts. Maximum number of outbreaks has been recorded in Karnataka state. Kerala, Odisha and Daman and Diu are the other places that reported the disease (Fig. 6).

Sheep & Goat pox disease has been recorded from two states and one union territory involving eleven districts. Maximum number of outbreaks has been recorded in Jammu & Kashmir state. Karnataka and Puducherry are other places that reported the disease (Fig. 6).

Black quarter disease has been recorded from four states involving eight districts. Maximum number of outbreaks has been recorded in Karnataka state. Madhya Pradesh, Odisha and Tamil Nadu are the other states that reported the disease (Fig. 6).

Peste des petits ruminants disease has been recorded from two states involving seven districts. Maximum number of outbreaks has been recorded in Karnataka state. Maharashtra is the other state that reported the disease (Fig. 6).

Hemorrhagic septicemia disease has been recorded from three states involving six districts. Maximum number of outbreaks has been recorded in Karnataka state. Kerala and Maharashtra are other states that reported the disease (Fig. 6).

Enterotoxaemia disease has been recorded from two states involving three districts. Maximum number of outbreaks has been recorded in Karnataka state. Himachal Pradesh is the other state that reported the disease (Fig. 6).

Anthrax disease has been recorded from three states involving four districts. Maximum number of outbreaks has been recorded in Karnataka state. Tamil Nadu and Odisha are other states that reported the disease (Fig. 6).

Swine fever has been recorded from four states involving five districts. Maximum number of outbreaks has been recorded in Punjab state. Kerala, Karnataka and Bihar are other states that reported the disease (Fig. 6).

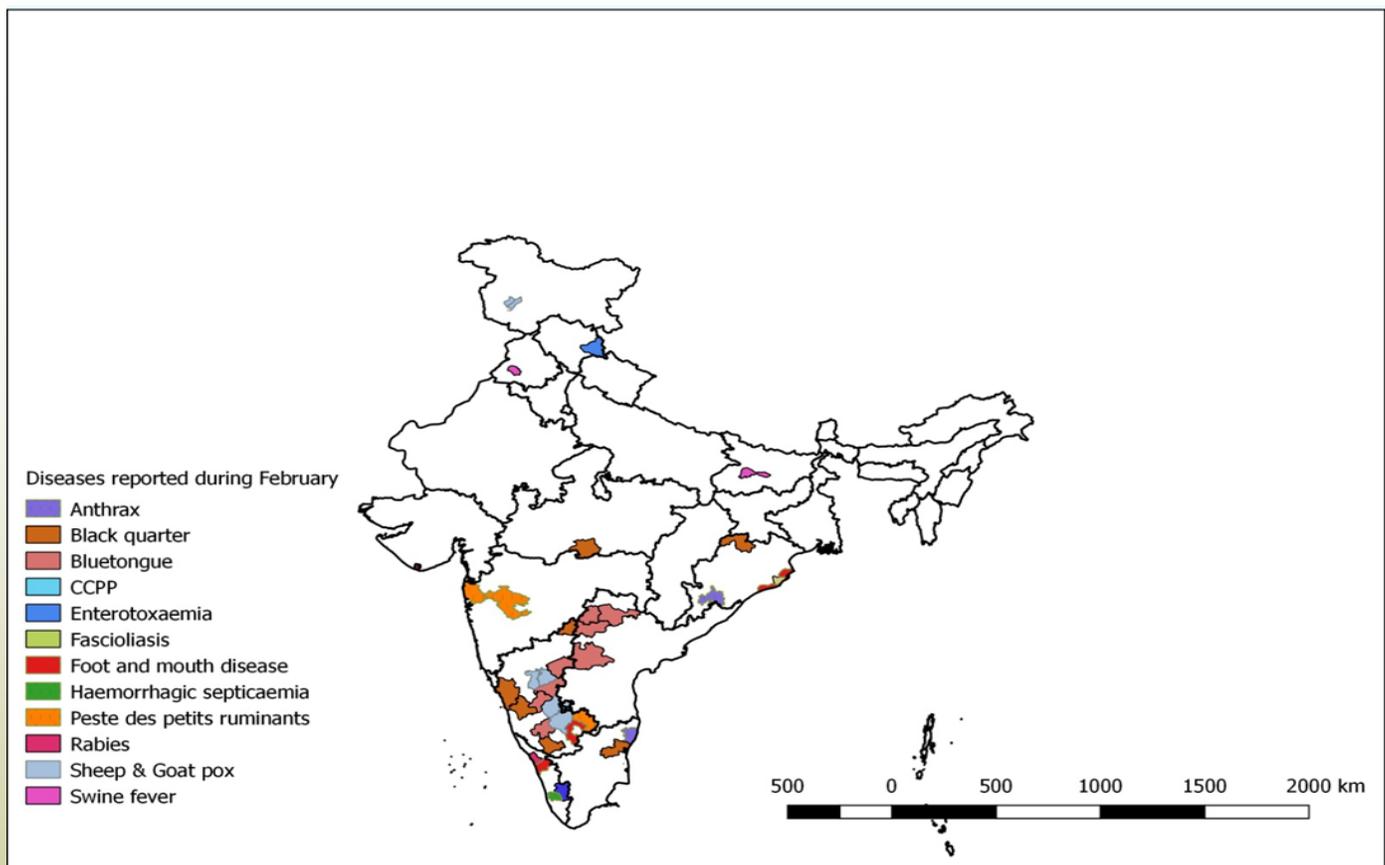


Fig. 6 Spatial distribution of diseases reported during February 2016

Table.3 State wise disease report for February 2016

State	Diseases Reported*
Andhra Pradesh	Bluetongue (Sheep)
Bihar	Swine fever (Pig)
Daman and Diu	Contagious caprine pleuro pneumonia (Goat), Foot and mouth disease (Cattle, Buffalo)
Himachal Pradesh	Enterotoxaemia (Goat)
Jammu & Kashmir	Sheep & Goat pox (Sheep, Goat)
Karnataka	Anthrax (Buffalo, Sheep), Black quarter (cattle, Sheep), Bluetongue (Sheep, goat), Enterotoxaemia (Sheep, Goat), Foot and mouth disease (Cattle, Buffalo), Haemorrhagic septicaemia (Buffalo, Cattle, Sheep), <i>Peste des petits ruminants</i> (Goat, Sheep), Sheep & Goat pox (Sheep, Goat), Swine fever (Pig)
Kerala	Foot and mouth disease (Cattle), Haemorrhagic septicaemia (Cattle), Rabies (Canine, Cattle), Swine fever (Pig), Theileriosis (Cattle)
Madhya Pradesh	Black quarter (Cattle)
Maharashtra	Haemorrhagic septicaemia (Cattle), <i>Peste des petits ruminants</i> (Goat)
Odisha	Anthrax (Cattle), Black quarter (Cattle), Foot and mouth disease (Cattle), Trypanosomiasis (Cattle)
Puducherry	Fascioliasis (Cattle, Goat), Sheep & Goat pox (Goat)
Punjab	Swine fever (Pig)
Tamil Nadu	Anthrax (Sheep), Black quarter (Cattle)

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

December 2015:

Rabies detected in a chicken in India, first such case

Indian researchers have reported the first case of rabies in domestic fowl, a chicken, in the country (Published in PLoS Neglected Tropical Diseases). This is the first report of naturally occurring infection of birds. The chicken (*Gallus domesticus*), was bitten by a stray dog and died a month later. Its carcass was sent to the rabies diagnostic laboratory. The brain tissue was positive for rabies viral antigens by fluorescent antibody test (FAT) confirming a diagnosis of rabies. Additional analysis revealed that the rabies virus strain from the domestic fowl belonged to a distinct and relatively rare Indian subcontinent lineage. (<http://outbreaknewstoday.com/rabies-detected-in-a-chicken-in-india-first-such-case-study-95907/>)

Elephant Dies of Anthrax in Kuldiha, Odisha

A female elephant, aged about 35, was found dead in Bhalubasa area of Kuldiha Reserve Forest in Balasore district, Odisha. The viscera test conducted by the Animal Diseases Research Institute (ADRI) at Cuttack confirmed presence of *Bacillus anthracis*, the anthrax organism in the female elephant. (ECTAD*, Vol. 4, No. 49, Date: 03 Dec 2015)

Glanders suspected in horses carrying Vaishno Devi pilgrims

Glanders' has been found in the horses carrying pilgrims to holy cave shrine of Mata Vaishno Devi Ji from Ban Ganga to Bhawan and back raising concerns over safety of the pilgrims as well as people living in holy town of Katra, base camp of Mata Vaishno Devi ji shrine and its surroundings. The 'Glanders' disease was confirmed following tests conducted on a number of horses, mules and donkeys. It was, however, found first in February 2015 in the horses brought from Muzaffarpur, Uttar Pradesh by a contractor. (ECTAD*, Vol. 4, No. 51, Date: 17 Dec 2015)

FMD warning to cattle owners

A health alert has been issued to cattle owners in the Kochi district of Kerala by the District Animal Husbandry Department to watch out for the foot-and-mouth disease (FMD) reported from a few panchayats. As a precautionary measure, the department has banned transfer of cattle from Keezhmad, Maneed, Alangad, Manjhapetty (Vazhakulam) panchayats following reports of 10-15 cases of FMD. (ECTAD*, Vol. 4, No. 51, Date: 17 Dec 2015)

20 peacocks found dead in Khurda forest, Odisha

Carcasses of at least 20 peacocks were found lying in Madhupur village forest in Khurda district on 8th December morning. Veterinarians and wildlife experts hint at possible bird flu deaths. The bodies were buried as per procedures followed in the event of bird flu outbreak while waiting for lab confirmation. (ECTAD*, Vol. 4, No. 50, Date: 10 Dec 2015).

January 2016:

Bird Flu Outbreak Found on Indian State Poultry Farm

Thousands of birds have died on a state poultry farm after an outbreak of H5N1 highly pathogenic avian influenza. The poultry farm is in the state of Tripura, in eastern India. Over 1500 birds died, and over 5000 birds were destroyed on the farm as a result of the outbreak. Movement controls, screening, disinfection and quarantine measures have been applied to prevent spread of the disease. (<http://www.thepoultrysite.com/poultrynews/36475/bird-flu-outbreak-found-on-indian-state-poultry-farm/>) (The poultry site- 36475)

Goat deaths trigger anthrax scare in Mayurbhanj district of Odisha

Death of more than a 100 goats in villages close to Dukura forest in the last couple of days in Mayurbhanj district has led to fear of anthrax outbreak. Forest and veterinary officials, though, are yet to ascertain the cause of deaths. The carcasses were first spotted in Mahalibasa village and later, nearby villages also reported sudden deaths of goats. Though no visible symptom of any disease was found, villagers said the animals developed swelling in the neck, stomach and died. A team of experts from Animal Diseases Research Institute (ADRI) in Cuttack visited Mahalibasa village. Veterinary doctor in Khunta village, Suvendu Ghosh said vaccination drive was conducted in Khunta and Dukura areas after detection of anthrax in elephants. (ECTAD*, Vol. 5, No. 1, Date: 07 Jan 2016).

Anthrax fear in Villupuram of Tamil Nadu as 10 cattle die

At least 10 cattle reportedly died of the disease in Anaikarai Kottalam village near Kallakurichi over the past one week. (ECTAD*, Vol. 5, No. 1, Date: 07 Jan 2016).

Biosafety lab to be launched in Kerala in February

The animal husbandry department would launch a 5,000 sq ft biosafety lab in Thiruvananthapuram next month. The facility would help Kerala check the spread of communicable diseases like avian flu. As of now, only primary level tests can be done in the state and final confirmation had to come from the national facility in Bhopal. (<http://timesofindia.indiatimes.com/city/kochi/Biosafety-lab-to-be-launched-in-February/articleshow/50571932.cms>)

February 2016

Bird flu alert in Uttar Pradesh

Taking no chances, the Uttar Pradesh government has sounded bird flu alert in the state. In Bareilly division, which includes Bareilly, Badaun, Shahjahanpur and Pilibhit districts, the officials have collected and sent 2,300 samples to Central Avian Research Institute (CARI) for testing. The entry of outsiders has been banned in the bird farms situated in the region. Besides, joint teams of veterinary, health, agriculture and forest departments have been formed to monitor the situation. (ECTAD*, Vol. 5, No. 8, Date: 25 Feb 2016).

Cattle smuggling on the India-Bangladesh border decreases

Cattle smuggling on the India-Bangladesh border decreases. Officers of the Border Security Force (BSF), whose jawans patrol the 915 km stretch of the border that West Bengal shares with Bangladesh, estimate that cattle smuggling has come down by more than 70 per cent since the government at the Centre made the issue one of its top priorities. (ECTAD*, Vol. 05, No. 05, 04 February 2016).

Villager dies of Crimean-Congo hemorrhagic fever (CCHF) in Rajkot district of Gujarat State

A 40-year-old man from Gondal taluka's Shivrajgadhi village of Rajkot district has posthumously tested positive for CCHF. The victim died on February 9 but his reports confirmed the infection on 11 Thursday. Chief district health officer of Rajkot said that the patient was brought to a private hospital in the city on 07 February. Following symptoms of CCHF, the samples were sent for lab tests. However, the patient died while being taken to Ahmedabad on 09 February. As precautionary measures, medical teams have been sent to Shivrajgadhi village and have screened close family members of the deceased. However, none of them showed any symptoms of CCHF. Earlier on 20 October, 2015, a two-year-old boy had died of CCHF in Jamnagar. (ECTAD*, Vol. 05, No. 07, 18 February 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

MEASURES OF DISEASE FREQUENCY

Proportion ($A/A+B*100$): A proportion indicates the fraction of the animal population that is affected by the disease or condition and is independent of time.

Ex: Of the 120 pig serum samples screened for PRRSV 40 were found to be positive. Hence the proportion of pigs with PRRSV is 33.33% ($40/120*100$).

Ratio (A/B): Special fractions in which the numerator includes animals which meet one criterion (e.g. the case definition) and the denominator includes animals which meet another criterion (e.g. do not meet the case definition but are at risk). A ratio is not dependent upon time.

Ex: 1 case of Mastitis for every 5 case of Metritis.

Rate: A proportion over a particular period of time. An epidemiologic rate will contain the disease frequency (numerator), unit of population size, and the time period during which the event occurred.

Ex: 10 cases of Anthrax per 1,000 population in Kolar district of Karnataka during the year 2000.

Incidence and Prevalence: The incidence and prevalence definitions along with suitable examples are published in EpiNET.India Vol2. Issue7. June2015.

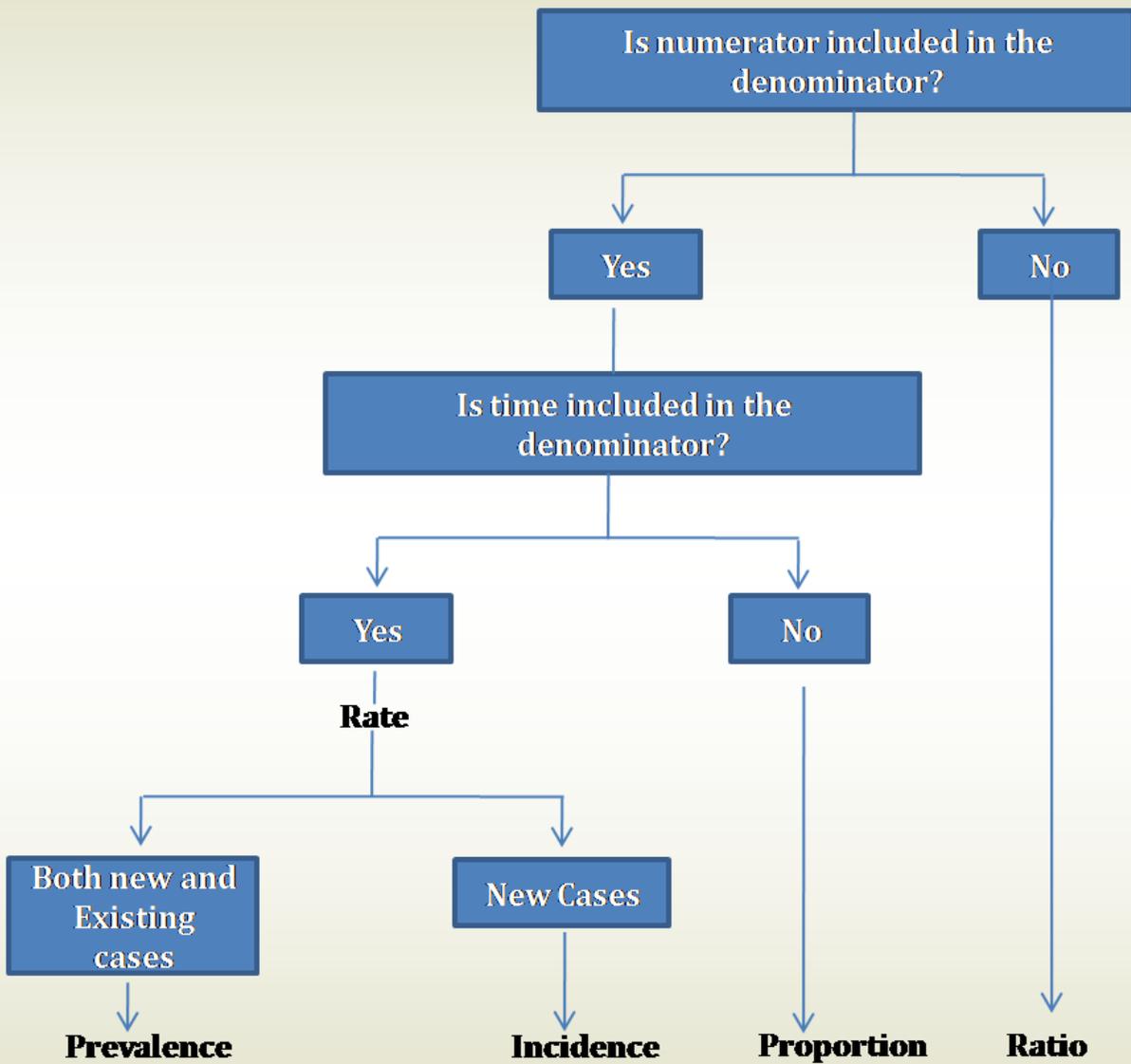
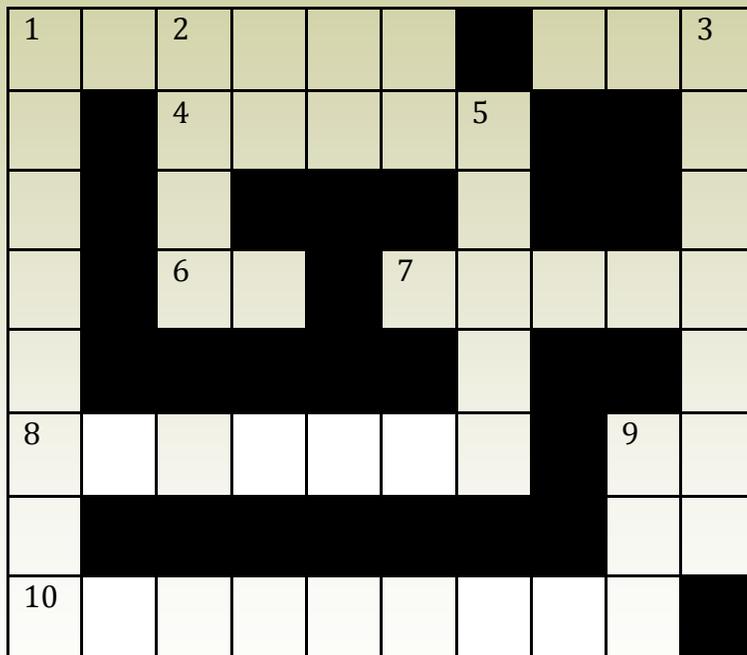


Fig.7 Distinguishing rate, prevalence, incidence, proportion and ratio

Epidemiology Cross Word Puzzle



DOWN

1. Any characteristic or attribute that can be measured and can have different values (8 letters)
2. An animal that has been diagnosed with health related state or event (4 letters)
3. A value statistically different from all of the other values in a distribution (7 letters)
5. An experimental study that uses data from individual animals and usually comes with prefix clinical (5 letters)
9. Abbreviation for a pig disease that is highly contagious with characteristic turkey egg appearance of kidney during PM examination (3 letters)

ACROSS

3. An intergovernmental organization coordinating, supporting and promoting animal disease control (3 letters- in reverse)
4. The one that when interacts with host under appropriate environment cause disease (5 letters)
6. Abbreviation for Clostridial disease of sheep and goat (2 letters)
7. A systematic deviation of results or inferences from the truth or processes leading to such systematic deviation (4 letters)
8. Having two data peaks (6 letters)
10. The ability of an intervention to produce the intended or expected results under ideal conditions (8 letters)

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-

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