

# Vector Borne Diseases- with reference to Blue Tongue in INDIA

**OIE Regional Workshop on Vector Borne Disease in the Asia-Pacific Region:  
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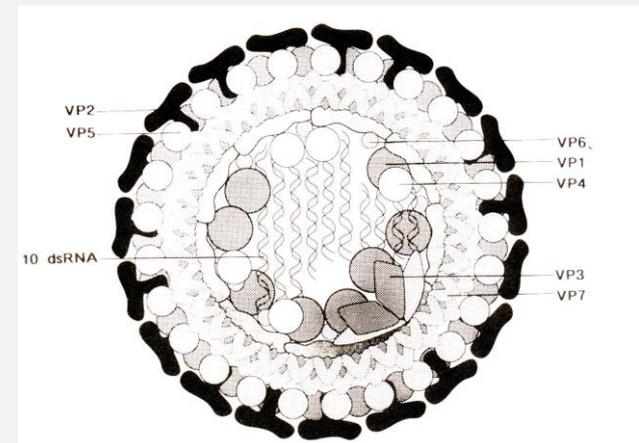
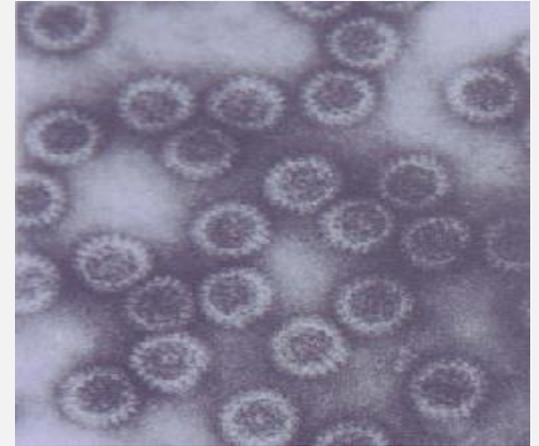
DADF-MOA-GOI

# Bluetongue in India

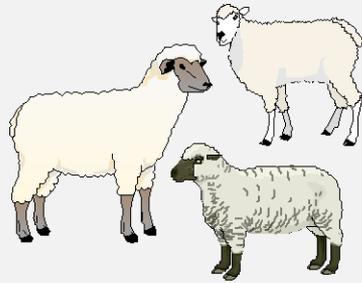
- First report in the Indian subcontinent- in 1958.
- In India reported in 1964.
- Now endemic in India.
- 22 serotypes in India: 13 serotypes isolated. 9 serological evidence.(1-4,6,9,10,12,16-18,21,23)
- Classical signs of BT are not prominent, differential diagnosis is very difficult as Orf, PPR and FMD viruses circulates and causes clinical disease in the same region.

# Virus

- Virus - RNA virus
- REO viridae family, Orbivirus genus
- Unique with 10 double stranded linear segmented RNA
- Two outer protein coats



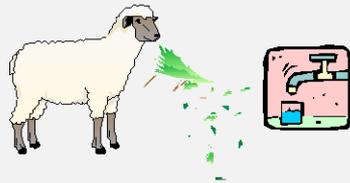
# Transmission



Contact



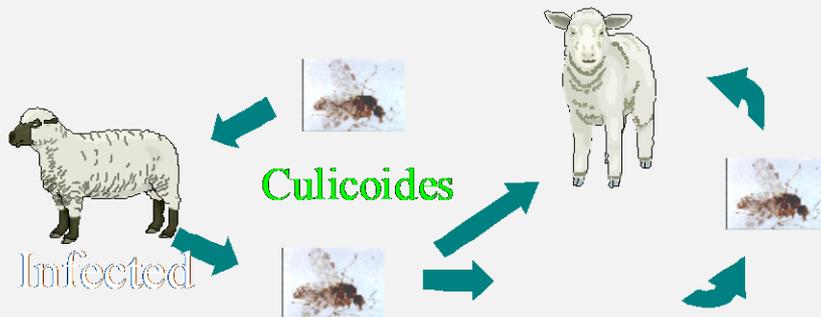
No transmission



Contamination



No transmission



Transmission

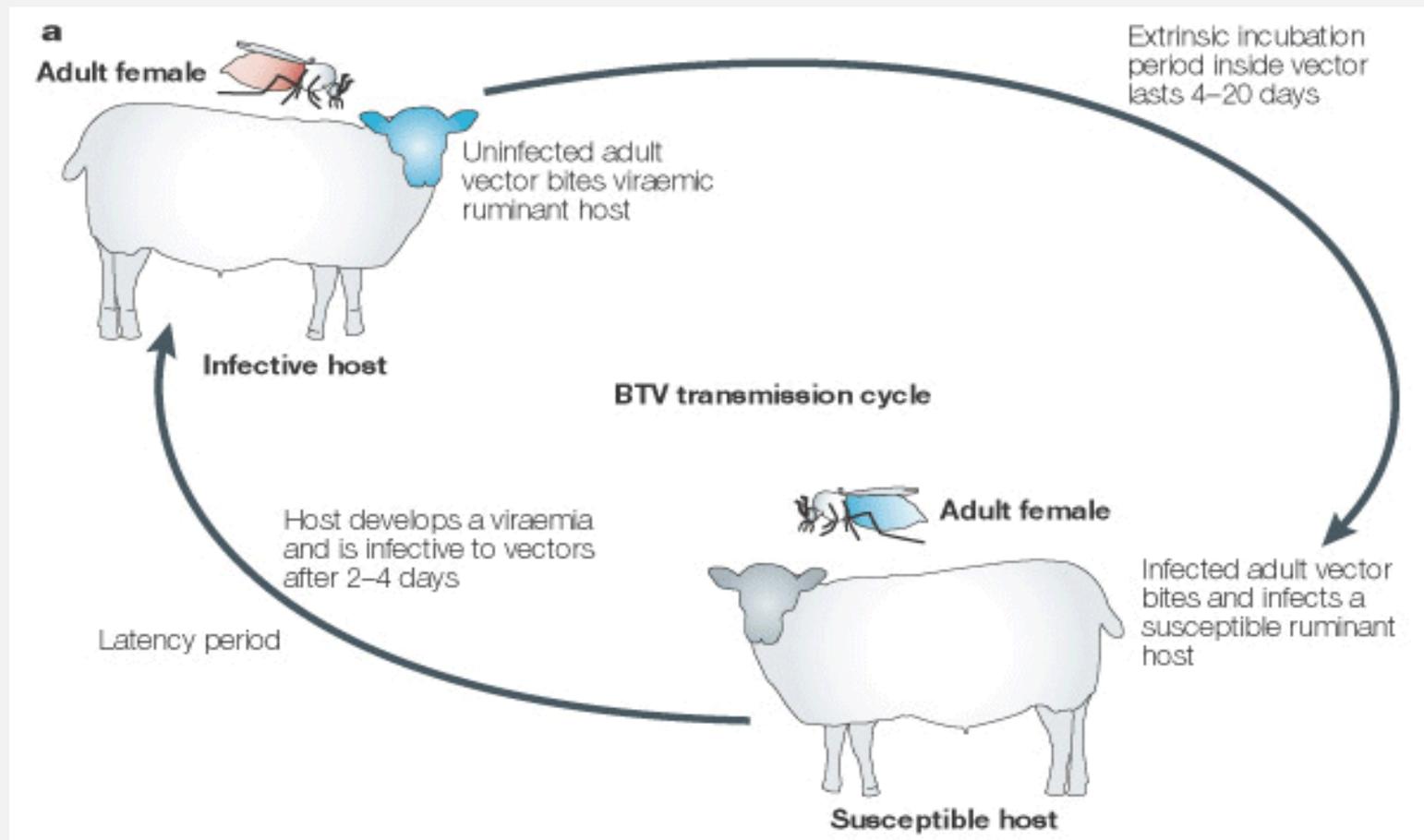
# Breeding spots for Culicoides



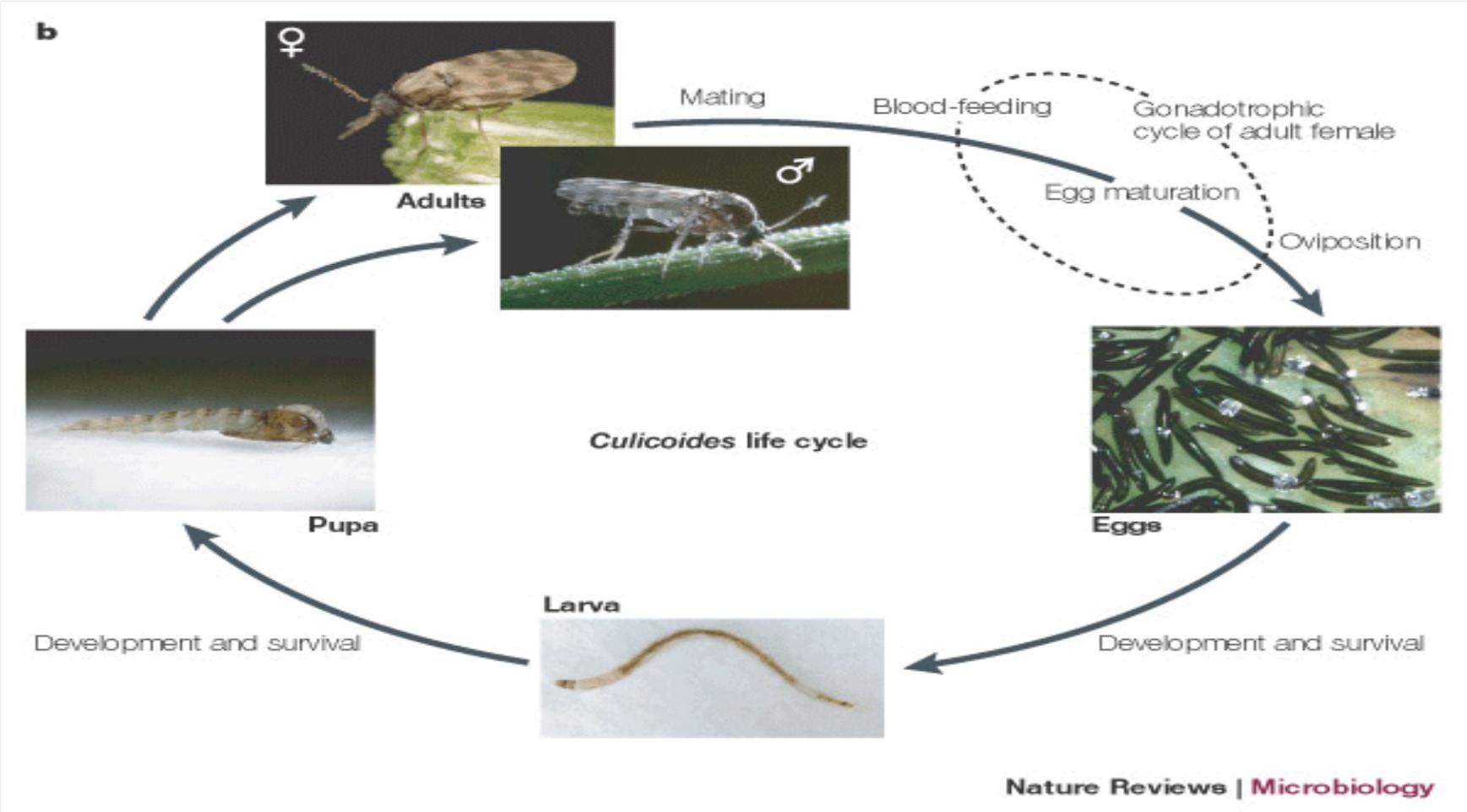
# Culicoides



# Transmission of BTV



# Life cycle of the *Culicoides* spp



# Culicoides trapping



# Animals affected

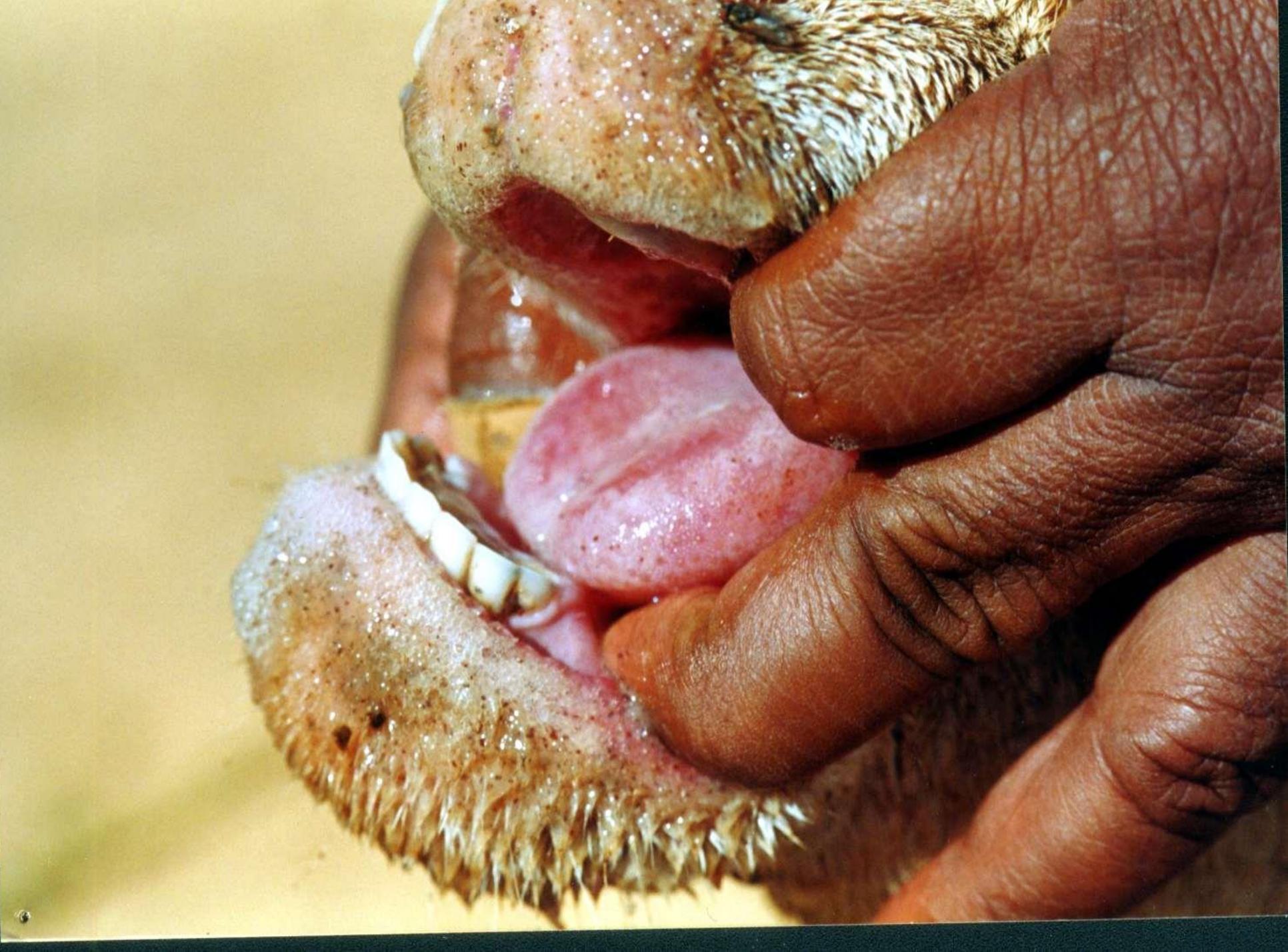
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- Domestic animals - sheep, cattle, goats, camel, buffaloes.
  - Wild ruminants - White tailed deer, Black tailed deer, Pronghorn antelope, Elk, Bison, Giraffe etc.,
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# Clinical disease















# BT disease impact -India

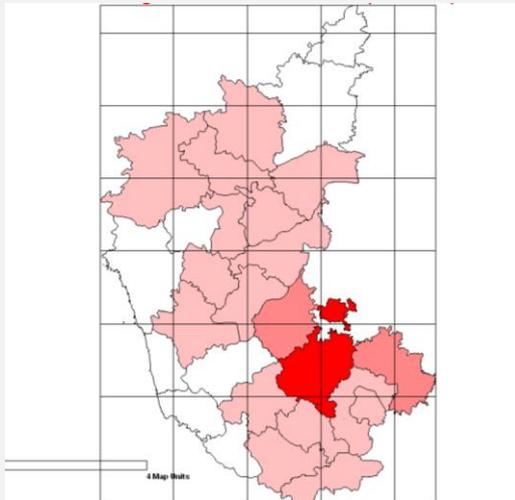
Total : 61.4 Million sheep

## Hypothetical assumptions: (Lower limits)

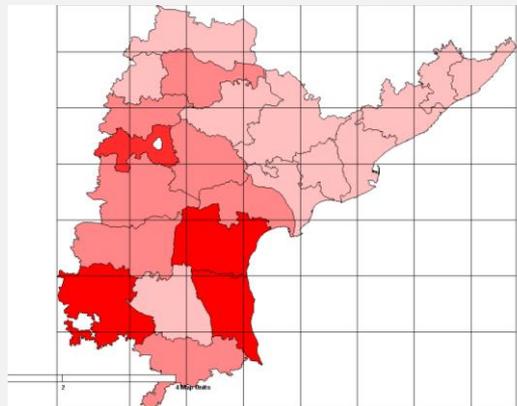
- 5 % morbidity - 3.07 million ( out of 61.4)
- 20 % mortality - 0.614 million (of 3.07)
- Indirect loss due to morbidity: Rs. 529.17 x 0.614  
= Rs. 324.91 million (Rs. 32.49 crores)
- Direct loss due to death: Rs. 3987.1 x 0.614  
=Rs. 2448.0794 million (Rs. 244.807 crores)

**TOTAL: Rs. 2772.9894 million ( Rs. 277.98Crore)**

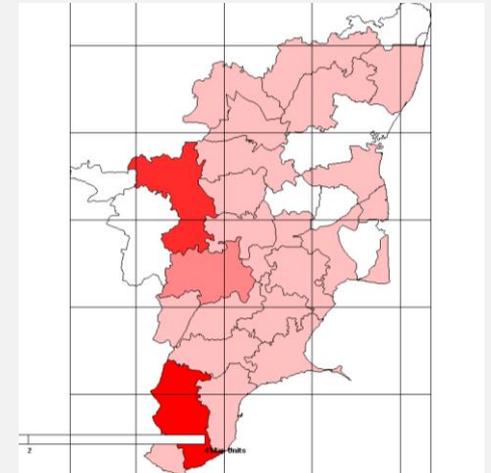
# Spatial distribution of Bluetongue in South India



**Karnataka**



**Andhra Pradesh**



**Tamil Nadu**

# National surveillance system / activities for vector /vector borne diseases

All India Network Programme on Bluetongue (ICAR).

Monitoring & Intervention Strategies for Bluetongue  
Virus Epidemics in Rural India ( IBV Net Programme)

# PLACE OF COLLECTIONS & CODES

KA-001 UAS, Bangalore



KA-002, Mysore



KA-003 Davanageri

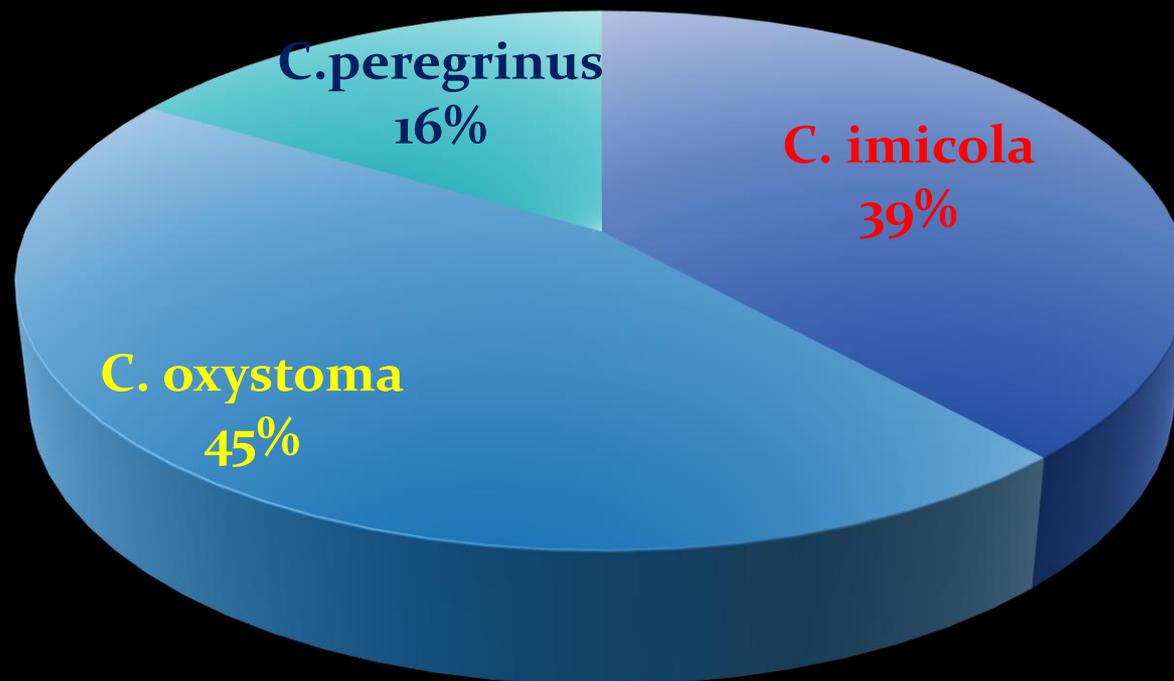


KA-004 Bellary



# Species wise Distribution of *Culicoides*

## SPECIESWISE DISTRIBUTION OF CULICOIDES



*C. fulvus*  
< 1%

*C. actoni*  
< 1%

*C. calvipalpis*  
< 1%

# ISSUES

- More of migratory flocks
  - Composite grazing
  - Lack of facilities for housing of flocks
  - Lack of education among farming community
  - Traditional believes
  - Unconventional treatment
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# LESSONS LEARNED / CONSTRAINTS

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## Thrust areas to be considered:

- More effective disease reporting system
- Rapid and confirmatory diagnostic tools
- A potent vaccine for India
- Disease status in wild ruminants
- More funding for BT research

# NEW POLICY / SUGGESTIONS

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More emphasis should be given on surveillance mechanism.

Pentavalent vaccine (1,2,10,16&23-polyvalent) can be used based on the requirement or surveillance reports.

Hiring more entomologists / training on the entomology (control mechanism of vectors)

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# ACKNOWLEDGEMENTS



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ICAR

OIE

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NIVEDI

Govt. Republic of Korea

