Reduced milk production
Poor reproductive performance
Growth retardation
Increased susceptibility to other diseases
Early culling and increased mortality among young stock

BVD is the most prevalent infectious disease in cattle and causes a significant negative economic impact. The mechanism of disease is complex, with different clinical manifestations for transient and persistent infections. Diagnostic tools, using specific antibody and virus detection techniques, are available to assess the BVD status of herds.  

References


BVD infection can have a negative economic impact through:

Mechanism of disease

- Transient infection
- Reproductive dysfunction
- Respiratory complications
- Diarrhoea
- Abortion, malformation

Persistently infected animal
- Early embryonic death
- Immunotolerance
- Fatal haemorrhagic disease
- Mucosal disease

Rare mutation within same viral strain

Insemination
Birth
PI day 30–110
ncp biotype
EUROPEAN UNION
EU
NORTH AMERICA

BVD farm status: means of diagnosis

- Herd level seroprevalence in the EU
- Prevalence of BVD type 1 and 2
- Virus detection
- Individual blood sample
- Pooled young stock blood
- Antibody detection

Types: Emergencies
- Emergency type 1: Prevalence of BVD type 1 and 2
- Emergency type 2: Prevalence of BVD type 1 and 2

Genotypes:
- BVD type 1 and BVD type 2

Biotypes:
- Cytopathogenic (cp)
- Non-cytopathogenic (ncp)

Taxonomy:
- Flaviviridae pestivirus

Spikes
Cover
Protein Shell
Genome
Ongoing BVD control schemes aim to:
1. remove PI animals from infected herds;
2. prevent the introduction of BVD virus in free herds (using live or inactivated vaccines);
3. monitor BVD status over time.

Eradication programmes in the EU have been applied variously at national, regional and herd level.

Management strategies in the EU

Essentials for a successful BVD management strategy:
- Removal of PI animals before vaccination
- Vaccination of cattle must induce broad and long-lasting immunity
- Vaccination of female cattle must confer foetal protection and must be safe during pregnancy
- Promotion of safe trade
- Surveillance

Current vaccination options in the EU

Type 1 protection
- NO
- YES
- Initial double dose required
- Use during entire pregnancy

Type 2 protection
- NO
- YES
- Initial double dose required
- Use during entire pregnancy

Modified live vaccines

Type 1 protection
- YES
- Initial double dose required
- Use during entire pregnancy

Type 2 protection
- NO

Inactivated vaccines

Type 1 protection
- YES

Type 2 protection
- NO

Promotion of safe trade

Eradication plans in the EU

National/regional programmes
- Nordic countries (DK, FI, NO and SE)
- Austria
- Netherlands
- Germany
- Scotland
- Ireland
- Northern Ireland
- Norway
- Rome, Lecco and Como
- Switzerland

Herd-to-herd programmes
- England
- France
- Italy
- Spain
- Portugal

Reference

BVD type 2 was first identified in North America, where it accounts for around 50% of infections. Although it is currently less prevalent in the EU (<10% of infections), recent outbreaks suggest that BVD type 2 is an emerging threat in the region.

References

BVD control programmes have so far failed to eradicate the disease except for the Nordic countries. This failure has been attributed to poor programme management and to the limitations of available vaccines. The cycle of BVD infection is perpetuated by PI animals and naïve heifers – both are key to the spread and maintenance of disease in herds.

**Why control programmes have failed to eradicate BVD**

1. Antigenic variation
2. Incorrect use of vaccines
3. Failure to remove PI animals
4. Failure to adhere to control strategies
5. Spread of BVD infections by injectables
6. Lack of marker vaccines against BVD

**Cycle of infection**

BVD control programmes have failed to eradicate the disease except for the Nordic countries. This failure has been attributed to poor programme management and to the limitations of available vaccines. The cycle of BVD infection is perpetuated by PI animals and naïve heifers – both are key to the spread and maintenance of disease in herds.

**References**