Survey of bovine respiratory disease complex (BRDC) pathogens from clinical cases submitted to Kansas State Veterinary Diagnostic Laboratory (KSVDL) using a real-time PCR panel.


Kansas State Veterinary Diagnostic Laboratory, College of Veterinary Medicine, Kansas State University
BRD Screening—Agent by Month

*Data collected up to 12/31/2017

- M. Bovis
- BVD
- BRSV
- BCV
- IBR
- IDV

Graph showing monthly screening data across various agents from July 2010 to August 2017.
Percent PCR Positive from 4,843 Clinical Samples Submitted to KSVDL

<table>
<thead>
<tr>
<th>Sample type</th>
<th>M. Bovis</th>
<th>BVD</th>
<th>IBR</th>
<th>BoCV</th>
<th>BRSV</th>
<th>IDV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tissue (3565)</td>
<td>59%</td>
<td>21%</td>
<td>3%</td>
<td>10%</td>
<td>12%</td>
<td>6%</td>
</tr>
<tr>
<td>Swab (2435)</td>
<td>36%</td>
<td>5%</td>
<td>6%</td>
<td>31%</td>
<td>7%</td>
<td>12%</td>
</tr>
</tbody>
</table>

*IDV testing started 2/13/15. IDV % based on total samples since that date (1440 tissue/1117 swab)
BVD Infections

*PI3 not included due to insufficient sample numbers

BVD Tissue Infections
(736 total / 21% of tissues submitted)

BVD Swab Infections
(123 total / 5% of swabs submitted)

BVD in:

% Tiss 86%
% swab 14%

BVD Infections

54%
13%
28%
0%
2%
1%
2%
2%
14%
20%
47%
21%
6%
5%
2%
Virus Isolation Results

BVD+ 37% of VI BVD PCR+ Samples (17% of all VI samples)
  – 242 from dead animals (78 cytopathic)
  – 28 from swabs (6 cytopathic)

IBR+ 34% of VI IBR PCR+ Samples (5% of all VI samples)
  – 38 from dead animals
  – 38 from swabs

BCV+ 12% of VI BCV PCR+ Samples (5% of all VI samples)
  – 16 from dead animals
  – 66 from swabs
BVD CT Range in Dead Animals
(736 Samples)

BVD CT Range in Live Animals
(127 Samples)
BVD Genotype Breakdown

1A 2A 1B 2B Undetermined

Summer

Spring

Autumn

Winter

*does not include non-amplified in total
BVD genotype 1a
22%

BVD genotype 1b
29%

BVD genotype 2a
44%

BVD genotype 2b
0%

5% Unable to determine genotype

*does not include non-amplified in total
### Break down of Undetermined group:

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>messy:</td>
<td>15</td>
</tr>
<tr>
<td>mixed:</td>
<td>7</td>
</tr>
<tr>
<td>messy/mixed:</td>
<td>10</td>
</tr>
<tr>
<td>Type 1, messy:</td>
<td>1</td>
</tr>
</tbody>
</table>

### Notes on other messy/mixed infections:

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A, messy:</td>
<td>2</td>
</tr>
<tr>
<td>1B, messy:</td>
<td>4</td>
</tr>
<tr>
<td>1B, mixed:</td>
<td>3</td>
</tr>
<tr>
<td>2A, messy:</td>
<td>6</td>
</tr>
<tr>
<td>2A, mixed:</td>
<td>15</td>
</tr>
</tbody>
</table>
Accessioned BRD Cases

BVD Genotype

- Genotype 1A: 330 cases
- Genotype 1B: 267 cases
- Genotype 2A: 198 cases
- Genotype 2B: 6 cases
Accessioned BRD Cases with BVD Vaccine Genotype

- Singer: 102
- NADL: 0
- C24V: 9
- 296: 1
- 5512: 1
- 125a: 1
- Viralign 2A: 1
- 53637 : 1