**Powerful Combinations. Powerful Protection.**

<table>
<thead>
<tr>
<th>COMBINATION</th>
<th>KILLED VIRUS</th>
<th>BACTERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BVD TYPE 1</td>
<td>BVD TYPE 2</td>
</tr>
<tr>
<td>VACCINE (5 mL dose)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vira Shield 6 10 dose/50 dose</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Vira Shield 6 + Somnus 10 dose/50 dose</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Vira Shield 6 + L5 10 dose/50 dose</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Vira Shield 6 + VL5 10 dose/50 dose</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Vira Shield 6 + VL5 Somnus 10 dose/50 dose</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

**Vira Shield Benefits**

**FIRST WITH THREE-WAY PROTECTION**
Vira Shield 6 vaccines contain three types of BVD protection.

**CONVENIENT**
Numerous ready-to-use combinations.

**PROTECTION FOR THE WHOLE HERD**
Vira Shield 6 combinations are safe for any animal in the herd, regardless of previous vaccination history, including pregnant cows and calves nursing pregnant cows.

**ABLE TO OVERCOME MATERNAL ANTIBODIES**
Vaccine shown to prime the immune system of young calves, even in the face of antibodies from cows’ colostrum.

**POWERFUL VIBRIO PROTECTION**
Vira Shield 6 + VL5 and Vira Shield 6 + VL5 Somnus offer Type 2 BVD and *Campylobacter fetus* protection in simple and effective combinations for cows and bulls.
INFEKTIVES BOVINE RHINOTRACHEITIS (IBR)

IBR, sometimes referred to as "red nose," is caused by bovine herpesvirus-1. The IBR virus is associated with:

- Upper respiratory tract infections
- Bovine respiratory disease
- Eye disorders like conjunctivitis
- Reproductive disorders such as infectious pustular vulvovaginitis (IPV), abortion and neonatal death

PARAINFLUENZA3 (PI)

Parainfluenza3 is in the same family as bovine respiratory syncytial virus (BRSV) and has been isolated, identified and studied in relation to bovine respiratory disease syndrome (BRD). PI virus is commonly isolated from animals suffering from BRD, although it appears to be more of a contributing agent rather than a primary pathogen. By itself, PI virus usually produces a rather benign infection of the lungs. It most commonly invades the lungs, causing an inflammation of the membranes that envelop the lungs, resulting in mild pneumonia.

BOVINE RESPIRATORY SYNCYTIAL VIRUS (BRSV)

BRSV was first isolated in the United States in 1974 and has been identified as a major contributing agent to the BRD syndrome. It was named BRSV because it promotes the formation of large masses of cells called syncytial cells in the epithelium and narrow spaces of the lung.

An initial exposure to the virus usually produces a mild subclinical infection, which occurs approximately five days after stress and exposure. Within two to 10 days after recovery from this primary infection, some animals will exhibit a severe clinical form of the disease, which if untreated will last 12 to 14 days and result in a high percentage of deaths. At any of these stages, the course and severity of the disease can be aggravated by invasion of the weakened animals by viral and bacterial pathogens.

CAMPYLOBACTERIOSIS

Bovine genital campylobacteriosis, previously known as vibriosis, is a venereal disease of cattle caused by C. fetus. This disease is spread from bull to cow and cow to bull during breeding. It can also be spread through artificial insemination if semen or pipettes are contaminated. Infection with Campylobacter is subclinical and restricted to the reproductive tracts of the ovine membranes of breeding bulls and cows. Uterine infections usually destroy the embryo at its earliest stages. However, in rare instances, the embryo may survive and be aborted later in pregnancy. The disease should be suspected when conception rates are low and there is an extended calving period. Diagnosis is difficult, but identifying organisms in mucus from cows' reproductive tract or prepartum fluid from bulls may be helpful.

Research shows that vaccination with the vibrio component of Vira Shield 6 + VL5 can significantly improve conception rates. (Figure 2)

FIGURE 2. Results From Campylobacter (Vibrio) fetus Challenge Study

<table>
<thead>
<tr>
<th>% Conception Rate</th>
<th>Controls (21 heifers)</th>
<th>Vaccinates (20 heifers)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0%</td>
<td>50%</td>
<td>80%</td>
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<td>10%</td>
<td>40%</td>
<td>60%</td>
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<td>40%</td>
<td>10%</td>
<td>20%</td>
</tr>
<tr>
<td>50%</td>
<td>0%</td>
<td>10%</td>
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</table>

VIRA SHIELD FOR PREWEANED CALVES

Research shows that calves do best when immunity-building begins early in life. However, maternal antibodies passed to young calves via colostrum can "tie up" the immunity-building process. In an Iowa State University study, the immune response of 20 young calves with residual maternal antibodies was measured after calves were vaccinated.

Trial protocol

Four groups of 30 animals each were handled as follows on day 0 and day 32:

- Group A: Control/no vaccine
- Group B: Elite 4 group
- Group C: Triangle 4 group
- Group D: Vira Shield 6 vaccine

Blood samples were collected on days 0, 32, 61, 97 and 125. Antibody titers were determined by standard microtiter serum neutralization tests.

Trial results (Figure 4)

Over time, the Vira Shield group showed higher titers after the booster dose given day 32. Calves given Vira Shield were able to overcome maternal antibodies and thus begin building immunity well before the stress of weaning.

FIGURE 3. Mean Antibodies Titers to BVD Type 1 Virus

Controls (21 heifers) Vaccinates (20 heifers)

Time (days)

<table>
<thead>
<tr>
<th>Group</th>
<th>Antibody Titer</th>
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</thead>
<tbody>
<tr>
<td>A: Triangle 4 group</td>
<td>50%</td>
</tr>
<tr>
<td>B: Elite 4 group</td>
<td>70%</td>
</tr>
<tr>
<td>C: Control/no vaccine</td>
<td>90%</td>
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</table>

BVDV Challenge

BVD virus is one of the most prevalent and challenging bovine viral pathogens in the world. There are hundreds of BVD virus strains, and the number continues to increase due to the mutating nature of the virus.

The BVD virus suppresses the immune system, which leads to secondary infections from other pathogens.

The virus manifests itself in numerous ways, including:

- Bovine respiratory disease
- Hemorrhagic (bleeding) syndrome
- Reproductive disorders, including infertility, abortion and neonatal defects
- Persistent infections (PI) calves that shed infective virus throughout their lives
- Gastrointestinal disorders
- Mucosal disease in PI calves

LONG-LASTING TYPE 2 IMMUNITY

A study conducted at South Dakota State University's Departments of Veterinary Science and Biology/ Microbiology demonstrated the value of the right antigens and adjuvant via a duration of immunity study involving Vira Shield.

Trial protocol

- 500- to 750-lb calves were vaccinated with two doses of Vira Shield 6 30 days apart.
- Animals were challenged 11 months post-vaccination with Type 2 BVD (Strain 890), which is a different strain from the Type 2 isolate in Vira Shield.
- Cattle were given a clinical score based on severity of respiratory signs (10 = poorest score)

Trial results (Figure 1)

Cattle vaccinated with Vira Shield showed significantly lower clinical scores compared to non-vaccinated animals on days 8 through 13 post-challenge. The authors concluded that vaccination with a properly administered inactivated vaccine can result in protection of cattle from challenge with Type 2 BVD for up to a year post-vaccination.

FIGURE 1. Respiratory Clinical Scores Following BVDV Challenge

Vaccinates Controls

Days Post-Challenge

<table>
<thead>
<tr>
<th>Clinical Score</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
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<tbody>
<tr>
<td>P &lt; 0.0001</td>
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<tr>
<td>B: Elite 4 group</td>
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<td></td>
</tr>
<tr>
<td>C: Triangle 4 group</td>
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**Vira Shield® 6**

**ADJUVANT:** Xtend® SP

**DIRECTIONS:** Shake well before using. Administer 5 mL subcutaneously. In accordance with Beef Quality Assurance guidelines, this product should be administered subcutaneously (under the skin) in the neck. Revaccinate in 4–5 weeks. Vaccinate dairy cows at dry-off. Revaccinate annually or as recommended by your veterinarian.

**PRECAUTIONS:** Store out of direct sunlight at 2°–8°C (35°–46°F). DO NOT FREEZE. Use entire contents when first opened. Do not mix with other products, except as specified on this label. In case of human exposure, contact a physician. Do not vaccinate within 60 days prior to slaughter. Transient swelling may occur at the site of injection. Anaphylactic reactions may occur. Symptomatic treatment: Epinephrine. Contains amphotericin B, gentamicin, and thimerosal as preservatives.

**Vira Shield 6 + L5**

**ADJUVANT:** Xtend® SP

**DIRECTIONS:** Shake well before using. Administer 5 mL subcutaneously. In accordance with Beef Quality Assurance guidelines, this product should be administered subcutaneously (under the skin) in the neck. Revaccinate with Vira Shield 6 in 4–5 weeks. Vaccinate dairy cows at dry-off. Revaccinate annually or as recommended by your veterinarian.

**PRECAUTIONS:** Store out of direct sunlight at 2°–8°C (35°–46°F). DO NOT FREEZE. Use entire contents when first opened. Do not mix with other products, except as specified on this label. In case of human exposure, contact a physician. Do not vaccinate within 60 days prior to slaughter. Transient swelling may occur at the site of injection. Anaphylactic reactions may occur. Symptomatic treatment: Epinephrine. Contains amphotericin B, gentamicin, and thimerosal as preservatives.

**Vira Shield 6 + VL5**

**ADJUVANT:** Xtend® SP

**DIRECTIONS:** Shake well before using. Administer 5 mL subcutaneously 2–4 weeks prior to breeding. In accordance with Beef Quality Assurance guidelines, this product should be administered subcutaneously (under the skin) in the neck. Revaccinate with Vira Shield 6 in 4–5 weeks. Revaccinate annually or as recommended by your veterinarian.

**PRECAUTIONS:** Store out of direct sunlight at 2°–8°C (35°–46°F). DO NOT FREEZE. Use entire contents when first opened. Do not mix with other products, except as specified on this label. In case of human exposure, contact a physician. Do not vaccinate within 60 days prior to slaughter. Transient swelling may occur at the site of injection. Milk reduction and transient depression may be observed in lactating dairy cows for 3–6 days following vaccination. Anaphylactic reactions may occur. Symptomatic treatment: Epinephrine. Contains amphotericin B, gentamicin, and thimerosal as preservatives.

**Haemophilus somnus**

The Vira Shield 6 product line offers three additional formulations with protection against diseases caused by *H. somnus*, including Vira Shield 6 + Somnus, Vira Shield 6 + L5 Somnus, and Vira Shield 6 + VL5 Somnus.

The label contains complete use information, including cautions and warnings. Always read, understand and follow the label and use directions.


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