

Scour Bos® 9

Bovine Rota-Coronavirus Vaccine, Killed Virus — Clostridium Perfringens Type C — Escherichia Coli Bacterin-Toxoid

For use in healthy pregnant cattle as an aid in the prevention of disease in calves caused by bovine rotavirus, bovine coronavirus, *Clostridium perfringens* Type C and K99 pilated *Escherichia coli*.

Product Numbers

Scour Bos 9
 #251 — 20 mL-10 doses
 #252 — 100 mL-50 doses

■ Flexible scheduling

Year 1:

- Give an initial dose of Scour Bos® 9 up to 16 weeks precalving
- Follow with a dose of Scour Bos 4, four weeks precalving

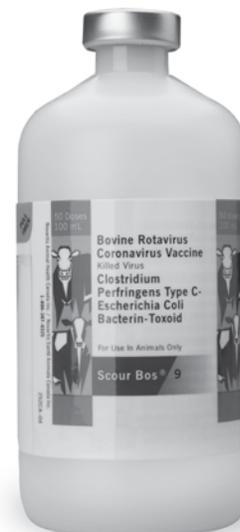
Year 2 and beyond:

- Give a Scour Bos 9 booster dose 8–10 weeks precalving
- No need to booster cows again if they haven't calved within 40 days of their last dose

■ **Provides powerful passive protection to the calf** — Calves receiving colostrum from dams vaccinated with Scour Bos 9 showed protection against three major causes of neonatal calf scours, coronavirus, rotavirus and K99 *Escherichia coli*

■ **Multiple field isolates** — Scour Bos 9 contains:

- Three different rotavirus isolates, including serotypes G10, G6 and G8¹
- Four different *E. coli* K99 isolates
- Antigens against coronavirus and *Clostridium perfringens* Type C

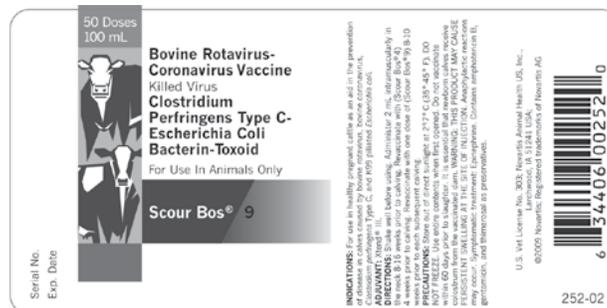


Scour Bos 9

ADJUVANT: Xtend® III

DIRECTIONS: Shake well before using. Administer 2 mL intramuscularly in the neck 8–16 weeks prior to calving. Revaccinate with Scour Bos 4 four weeks prior to calving. Revaccinate with one dose of Scour Bos 9 8–10 weeks prior to each subsequent calving.

PRECAUTIONS: Store out of direct sunlight at 2°–7°C (35°–45°F). DO NOT FREEZE. Use entire contents when first opened. Do not vaccinate within 60 days prior to slaughter. It is essential that newborn calves receive colostrum from the vaccinated dam. **WARNING: THIS PRODUCT MAY CAUSE PERSISTENT SWELLING AT THE SITE OF INJECTION.** Anaphylactic reactions may occur. Symptomatic treatment: Epinephrine. Contains amphotericin B, gentamicin and thimerosal as preservatives.



252-02

Technical disease information

Coronavirus

Coronavirus causes one of the most severe viral diarrheas of neonatal calves. It may produce complete villus atrophy of the intestine. It is found worldwide and produces a severe diarrhea with dehydration and moderate mortality. A dual infection with rotavirus or *E. coli* can escalate the disease. Affected calves are extremely depressed but they often continue nursing. Coronavirus is also capable of infecting lung tissues and may produce respiratory signs. Calves most commonly affected with coronavirus diarrhea range in age from 5–21 days. Diarrhea usually lasts 4–5 days. Affected calves are the main source of infection to other calves, but evidence indicates that some recovered calves and cows will continue to carry virus and serve as long-term reservoirs.

Rotavirus

Bovine rotavirus diarrhea is found worldwide. Rotaviral diarrhea results from replication of the virus in villus enterocytes of the small intestine. Clinical signs range from mild to severe diarrhea, which results in dehydration, depression and sometimes death. A high incidence of rotaviruses has been detected in scouring calves on both beef and dairy farms and ranches. The disease occurs most frequently within the first two weeks of life. The severity of the disease is often worse in calves co-infected with other enteropathogens.

Rotaviruses are currently classified according to G and P serotyping (genotyping). G refers to one site on the virus' outer surface and P refers to another site. Field surveys have demonstrated that G6 and G10 are the most prevalent.¹ Another less common but emerging serotype is G8.

Scour Bos incorporates three unique field isolates of rotavirus. Independent genotyping of these three isolates by the University of Nebraska-Lincoln in 2003 found that the G10, G6 and G8 serotypes are represented in Scour Bos 9.²

Efficacy of the Scour Bos rotavirus components has been proven in challenge of immunity studies. As noted in Table 4 below, calves from vaccinated dams withstood a mixed field challenge of G6 and G8 much better than calves that consumed colostrum from nonvaccinated dams.

Treatment

Treatment for rotavirus and coronavirus enteritis consists of maintaining hydration and electrolyte balance through the use of fluids administered

either orally or intravenously. It is important to maintain calves on milk, since electrolyte fluids alone cannot supply all the nutrition a calf requires. Antibiotic therapy is also often incorporated to control secondary bacterial infections.

Escherichia coli

Colibacillosis caused by *E. coli* is primarily an enteric disease of calves from birth to 7 days of age. It may cause a severe diarrhea. Pathogenic *E. coli* are commonly found in the manure of healthy cows. This results in most calves being exposed shortly after birth. Unless the calf has received some type of newborn protection, it is very susceptible to developing colibacillosis. The bacteria attach to the lining cells of the intestine by means of projections called pili. After attachment, the bacteria produce toxins that cause the intestine to secrete large amounts of fluid, which results in diarrhea, dehydration and possible death.

Clostridium perfringens Type C

Clostridium perfringens Type C is commonly found in soil. It is also a common inhabitant of the intestinal tract in healthy animals. Engorgement with milk is often a predisposing factor to disease. Type C enterotoxemia is caused by an overgrowth of these bacteria in the calf's intestine. This results in severe toxemia and high mortality rates. Calves may be found dead without showing any symptoms. They may show signs including bloating, abdominal pain, hemorrhagic diarrhea or extreme weakness.

Prevention

Preventing baby calf scours requires careful management of the dam, the environment and the calf. The most important step in the program is immunization of the dam with an effective vaccine. This will result in high levels of maternal antibodies passed to the calf through the colostrum it receives after birth. Scour Bos 9 is the ideal vaccine because it provides heterologous coverage for multiple rotavirus serotypes, coronavirus, four isolates of *E. coli* and *Clostridium perfringens* Type C.

It is vital that herds are managed to ensure that all calves receive adequate levels of colostrum within the first critical hours (0–6) after birth. In severe disease outbreaks, it may also be necessary for dairy calves to continue receiving milk from vaccinated cows, free of Johne's disease, until they have passed the susceptible age.

Table 1: *C. perfringens* type C antitoxin titers results³

Group (pooled samples)	Titer (IU/mL)
Dam's colostrum	≥ 50
Calf serum (3 days of age)	≥ 10
Calf serum (10 days of age)	≥ 10

Table 3: *E. coli* challenge results³

Group	% Mortality
Vaccinates ^a	0
Controls ^a	70

^aP < 0.001.

Table 2: Coronavirus challenge results⁴

Vaccinates' geometric mean titers		Dehydration difference	Depression difference	Clinical difference
Calf serum	Dam colostrum			
2.5x increase	4x increase	P < 0.01	P < 0.05	P < 0.05
baseline	baseline			

Table 4: Rotavirus challenge results^{5,6}

Vaccinates' geometric mean titers		Dehydration difference	Depression difference	Clinical difference
Calf serum	Dam colostrum			
9x increase over controls	7x increase over controls	P < 0.01	P < 0.01	P < 0.01

¹Shodgrass, D.R., et al. 1990. Rotavirus Serotypes 6 and 10 predominate in cattle. J Clin Microbiol. 28:504-507.

²Grand Laboratories. 2000. Rotavirus vaccine strains memo.

³Halburn, T. 1999. *E. coli* and Type C Efficacy Data for code 4570.2.

⁴Rydberg, P.L. and Tinant, M. VRD 99-007 Bovine Corona Study #2.

⁵Bovine Rotavirus Host Animal Efficacy Study VRD 99001 (IM Claim) Notebook 358. 0 DPC.

⁶Rydberg, P.L. Bovine Rotavirus (GL-617, GL-629, GL-734) Host Animal Efficacy Studies. Grand Laboratories, Inc. U.S. Vet Lic. No. 303.

