

Bovine Viral Diarrhoea (BVD)

Background

Bovine viral diarrhoea virus (BVDV) is recognized as a source of disease in alpacas, resulting in reproductive loss and illness. This virus has potential to spread within the alpaca herd so must be taken seriously. The cattle industry has been battling BVDV for decades.

Bovine Viral Diarrhoea is a significant disease in alpaca. Unlike many other virus species, the BVD virus can infect a foetus in utero by crossing the placental barrier. If that happens during early pregnancy, specifically in the first trimester, the virus establishes itself at a time when the foetus' immune system is still immature and unable to mount an immune response. At the time of birth, the virus will be present in very high numbers in the blood and virtually every organ and tissue of the cria. Without the benefit of an immune response to fight the virus, the cria will harbour BVDV for the rest of its life and is, by definition, persistently infected (PI).

While the development of a PI cria is rare, it is possible for such cria to be born, and to grow up, uneventfully and unrecognizable by observation only. However, throughout its life it will shed BVDV virus through every bodily fluid, including urine, faeces, nasal excretions, tear fluid, and saliva, thereby not only contaminating the environment but also potentially infecting every alpaca it has contact with.

This creates a significant risk for all other animals on the farm and, if traveling to a show, many other animals could become transiently infected (TI) with BVDV. While those animals generally recover, they can cause significant economic losses to the alpaca owner, mostly through infection of other animals, possibly with significant veterinary expenses and reduced fertility. Additionally, if alpacas are kept alongside cattle, the virus can very readily affect the cattle as well. PI animals are considered to be the single most important and effective transmission mode of BVDV.

Generally, the diagnosis of BVDV PI means the animal will be culled. The sample type submitted is usually a blood card, where a small amount of blood is soaked up by a barcoded filter card. If a sample is found positive, a second confirmatory test with whole blood in a purple top tube should be conducted 3 weeks after the first sample collection. If the animal is unable to clear the virus from the blood stream within that time frame it must be considered PI.

BVDV testing is conducted using the polymerase chain reaction method (real time PCR), which provides excellent sensitivity and specificity.

Clinical Information

Acute Infection in Non-Pregnant Alpacas:

Healthy alpacas can get the virus from infected alpacas and cows. This virus is fought off by that alpaca's immune system, is acute (short lived), and results in an induction of the ability of that alpaca's antibodies to neutralize the virus during this infection and when exposed to the disease again at another time. Potential symptoms in an alpaca infected with BVDV

include, but are not limited to, a fever, decreased appetite and rarely diarrhea, but animals may show no symptoms.

Acute Infection in Pregnant Alpacas: The BVDV infection in a pregnant alpaca can be a completely different matter. The infected pregnant dam's immune system reacts just as described above – virtually no symptoms and no consequences to her. However, the consequences of infection on the developing foetus can be serious. These range from no effect, to abortion, to birth of a persistently infected (PI) cria, and probably depends on when the foetus was exposed to the virus in the mother's blood.

Persistent Infection: The PI state results because the foetal immune system accepts the virus as its own. The foetus is unable to fight the virus and never develops antibodies to that strain of virus for its entire life. Note that a PI animal does not get the infection outside the womb. The only way to become a PI alpaca is through viral exposure in utero (before birth).

Many PI-crias are “poor doers.” However, some PI crias grow to adulthood with no signs of any clinical disease. The reason PI animals are such a problem is that they shed huge quantities of infectious virus through respiration and all body fluids into the environment every day with some of them looking and acting perfectly normal. One PI alpaca is nearly three years old and appears completely healthy.

Not every “poor doer,” small or aborted foetus has BVDV infection or is a PI. Repeated testing for the virus by a diagnostic laboratory that is experienced in alpaca BVDV testing procedures and consultation with your veterinarian is necessary before concluding that an alpaca is persistently infected with BVDV.

Since there is no treatment for BVDV infection, once an animal is identified as PI it must be euthanized or completely quarantined. The reason for these drastic measures is that the unrecognized PI alpaca will continue to spread this disease.