

Brucella abortus Strain RB51 Vaccine Licensed for Use in Cattle

In February 1996, APHIS licensed *Brucella abortus* strain RB51 vaccine for use in cattle as part of the cooperative State-Federal Brucellosis Eradication Program. *B. abortus* strain RB51 is a genetically stable, rough morphology mutant that lacks the polysaccharide O-side chains on the surface of the bacteria. These O-side chains are responsible for the development of the diagnostic antibody responses of an animal to brucellosis infection. Therefore, strain RB51 vaccine does not stimulate the production of antibodies on standard diagnostic tests. The vaccine does produce other types of antibodies that can be detected with a special assay to detect if an animal has been vaccinated. It produces a cell-mediated response that is primarily responsible for its protection against brucellosis.

Strain RB51 is as efficacious as *Brucella abortus* strain 19 vaccine but is much less abortigenic in cattle. It does not produce any clinical signs of disease after vaccination, nor does it produce a local vaccination reaction at the injection site. The organism is cleared from the blood stream within 3 days and is not present in nasal secretions, saliva, or urine. Immunosuppression does not cause recrudescence, and the organism is not spread from vaccinated to non-vaccinated cattle. The vaccine is safe in all cattle over 3 months of age.

In case of human exposure, strain RB51 is sensitive to a range of antibiotics used in the treatment of human brucellosis, but is resistant to rifampin and penicillin.

Strain RB51 vaccine must be administered by an accredited veterinarian or by a State or Federal animal health official. Calves must be vaccinated with the calf dose (10 to 34 billion organisms) between 4 and 12 months of age. Only animals in high risk areas should be vaccinated over 12 months of age.

Vaccinates must be identified with the standard metal vaccination eartag and a vaccination tattoo. The tattoo will be the same as with *B. abortus* strain 19 vaccination except the first digit for the quarter of the year will be replaced with an "R" to distinguish animals vaccinated with RB51 from those vaccinated with strain 19. Recording and reporting are the same as with strain 19 vaccine.

B. abortus strain 19 vaccine has not been removed from the market or from the Brucellosis Eradication Program at this time. However, APHIS has been advised that strain 19 vaccine production has ceased, and some States no longer allow vaccination with strain 19.

B. abortus strain RB51 has not yet been approved for general use in bison. Preliminary studies indicate that RB51 is safe and efficacious in bison calves. However, in order for RB51 to be conditionally licensed in bison, additional safety and efficacy trials must be completed.

Bison calves can be vaccinated with strain RB51 as part of a field safety trial evaluation prior to its being licensed. The requirements for participating in the trials are that all abnormal reactions or clinical problems associated with the vaccination be reported to a USDA, Animal and Plant Health Inspection Service, Veterinary Services veterinarian for investigation.

Bison vaccinated as part of the field safety trials will be recognized as official vaccinates provided that the proper vaccination charts and identification are completed as required under the Brucellosis Eradication Program Uniform Methods and Rules.

For further information, contact USDA, APHIS, VS, Brucellosis Eradication Staff, 4700 River Road, Riverdale, MD 20737, Area Code (301) 734-7708.