Prebreeding Immunization of Beef Cows

Merlin Kaeberle, *Professor, Department of Microbiology, Immunology and Preventive Medicine; College of Veterinary Medicine*
Dennis Maxwell, *Cattle Manager, McNay Farm*
Ronald Sealock, *Superintendent, Rhodes Research Farm; Iowa State University, Ames, IA*

Abstract

A number of infectious agents are potential threats to the fetus of a pregnant cow with resultant abortion. These agents include *Leptospira sp.*, *Campylobacter fetus* and agents such as infectious bovine rhinotracheitis (IBR) and bovine virus diarrhea (BVD) viruses. Maintenance in the cow of a high level of immunity to these agents during pregnancy can insure protection of the fetus. In particular, vaccines against BVD and IBR viruses can establish protective immunity throughout gestation.

An appropriate vaccination regimen prior to breeding can establish this protective immunity. This can be achieved with a single dose of certain modified live virus vaccines but those vaccines must be administered at least 30 days prior to breeding to avoid interference with conception. We have evaluated an oil-adjuvanted inactivated virus vaccine in cattle with differing immunologic history. Two doses of the vaccine administered 30 days apart to serologically negative animals induced appreciable levels of BVD and IBR anti-viral antibodies with persisting titers throughout gestation. In other experiments a single dose of the vaccine was administered to: (1) animals given two doses of the vaccine several months earlier, (2) animals previously vaccinated with modified live virus vaccine, or (3) animals naturally exposed to the virus. The vaccine consistently induced marked anamnestic responses in these animals. Not only did mean titers rise but a vast majority of individual animals responded. This contrasts with efforts to boost titers with modified live virus vaccines where the effect may be erratic among animals. The safety and efficacy of selected inactivated viral vaccines argues for their use in prebreeding immunization of beef cows.