The Role of Vaccines in Managing Mastitis

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Mastitis continues to be a very costly disease of dairy cattle. Each year millions of dollars are spent on the treatment of infected animals, and an even greater amount of income is not even realized because of lost milk production from unknown subclinical infections. Mastitis management practices have improved considerably in recent years, as producers have incorporated the use of better milking management practices, pre and post milking teat dips, dry cow therapy, more prudent use of intramammary antibiotics, and better cow and heifer nutrition, housing and general care.

Another approach to reducing the impact of several of the more important mastitis causing organisms has been the introduction of vaccines against those pathogens. Vaccines are available for use against coliforms (a group of environmental pathogens) and *Staph. aureus*. These vaccines can aid by helping reduce the severity and longevity of clinical mastitis infections, as well as by providing a degree of protection against new intramammary infections caused by these pathogens.

The J-5 type of bacterines are used to protect against intramammary infections caused by coliforms (*E. coli*, *Klebsiella* species, *Citrobacter* species, and *Enterobacter* species). When given to adult cows during the dry period, they have been shown to be a sound investment that should probably be used in virtually every dairy herd. In fact, the use of a J-5 vaccine is even recommended for use with pregnant heifers. Dr. Steve Oliver, a well respected mastitis researcher from Tennessee, and others within the industry, advise producers to administer the first dose of a J-5 vaccine about six weeks before freshening. A booster injection should be given about four weeks later, and another booster injection within two weeks after freshening.

Vaccinating cows and heifers against intramammary infections caused by *Staph. aureus* is a practice that is not used very much currently. It is, however, a practice that is being recommended by various mastitis researchers and veterinarians. Recently reported research that investigated the effect of administering a *Staph. aureus* vaccine to enhance the response of intramammary antibiotic treatments to lactating cows with *Staph. aureus* infections has shown great promise for increasing the cure rate.

Dr. Stephen Nickerson from Virginia Tech recommends vaccinating pre-pubertal heifers against *Staph. aureus* starting at about six months of age. Studies he and others did showed that the percentage of new *Staph. aureus* udder infections occurring in heifers before or during pregnancy was reduced by nearly 45% in the vaccinated heifers. The vaccinated heifers also experienced a reduction in mastitis caused by staph species other than *Staph. aureus*. These are the coagulase-negative staph (CNS) that are prevalent in dairy herds.

While vaccines against mastitis causing organisms have been shown to be effective, they are not a substitute for using proven management practices that can minimize the incidence of mastitis in a herd. A well designed and implemented mastitis prevention and control program should be practiced by every dairy manager. In some herds the use of these type of vaccines may not be cost effective. Before implementing the use of vaccines to control mastitis in a herd, dairy producers should discuss their individual herd situation with their veterinarian and seek his/her advice.