

# Vaccination can help control Johne's

by Donald Rothbauer, D.V.M.

ONE day in September 1996, Randy called me to examine yet another young cow that had problems. She was thin with a dull coat. Several days before, she had broken with diarrhea that did not respond to treatment.

I had worked with Randy since he purchased the farm and its 50 cows 15 years before. Randy knew how to get cows to milk. Production rose rapidly after he took over. That was when the problem with fading cows first appeared. I suspected Johne's, but Randy was reluctant to test to be sure. He did not want to get on the "black list."

Instead, I set up some guidelines based on current theories of control. I suggested that he have two dedicated freshening pens that he could clean after each calving. I suggested that he be present at birth, remove the calf right away, and hand-feed the colostrum. He then should isolate the calves in a hutch or some other facility away from the cow barn.

Randy adopted the plan as best he could. His barn allowed for only one freshening pen. He was short-handed and could not always be around when cows calved. Often, he had to put two or three cows in the calving pen at once. The pen did not always get cleaned between calvings. Occasionally, cows would freshen before they were put into the calving pen.

In good weather, he kept the calves in hutches outside. In winter, he kept them in the barn until weaned. Randy did not pool colostrum. He fed a good-quality milk replacer.

## ***It wasn't enough . . .***

Randy's efforts were not enough to stop the disease. He raised 20 to 25 heifers per year, but he still had to buy bred heifers each year.

Herd health deteriorated. Cows that should have been culled for chronic mastitis, poor fertility, or both were kept just to keep the stalls full. Bulk tank somatic cell count and "days in milk" climbed. Rolling herd average dropped. As Randy's expenses went up, his income went down.

That fall day in 1996 was a turning point. It was obvious his management efforts were not doing the job. Unless

things changed, he could not survive in the business much longer. It was time to quit hiding the problem. We needed to define it and set a course of action to control it.

Looking back through his records, Randy determined that he was shipping about 10 cows per year with chronic diarrhea and wasting. Sixty percent of those culls were first-calf heifers. They would freshen normally, but within three to four months they would break with the disease. Another 30 percent would break in the second lactation. A few cows would go several lactations before breaking.

Some experts believe that three things determine the age that a cow breaks with Johne's:

- The age when exposure occurs. Animals exposed at a younger age have a shorter incubation period.

- The level of exposure. Higher exposure levels cut the time needed for the disease to overwhelm the animal.

- The resistance of the animal. Stress reduces resistance.

The number of first-calf heifers that developed the disease in Randy's herd suggested that his heifers were being exposed at an early age and that the environment was heavily contaminated. The stress of calving and production also was a contributing factor.

We tested his herd with the Johne's ELISA test. Eight of 57 cows were positive. This suggested that more than 30 percent of the herd was infected.

When I looked at just the home-raised cows and considered the number that were culled with the disease, I estimated the level of infection closer to 100 percent. We had a problem.

I encouraged Randy to consider vaccination. Research has shown that vaccination will reduce clinical disease by at least 90 percent. The number of cows that become infected is markedly reduced. In one survey, most herds were fecal culture negative within five years.

Our clinic has had many herds on the vaccination program. Usually, clinical disease virtually stopped as soon as the vaccinated heifers entered the milking herd. These herds experienced a turnaround in herd health. Most of our herds that were tested after at least five years

of vaccinating were culture negative.

Randy was concerned. He had heard that even though vaccination suppressed clinical signs, it caused carriers. He did not want a herd full of carriers. I told him that research did not support that claim. The vaccine is a killed product and cannot cause the infection.

Still concerned, Randy wanted to try another approach. He had read about "test and cull." He wondered if this could work for him. I explained that it still was a theory and that no herds that I knew of had been cured by this approach.

We agreed on a plan. We would update the management recommendations and implement "test and cull."

Within months, Randy could see problems. Some of his best cows tested positive for Johne's. It was difficult to sell these cows and leave the stalls empty. At the same time, cows that tested negative only months before would break with the disease. Also, some first-calf heifers would break with the disease before they could be tested.

Randy decided to vaccinate. And he continued to follow my management recommendations to minimize young stock exposure to the organism. We continued to ELISA test the nonvaccinated heifers that entered the milking herd to help us with culling decisions. I asked him to keep close track of his herd health.

That was over six years ago. Recently, I examined Randy's records. Here are some observations:

- Of the 35 heifers born just prior to vaccination, 14 left the herd with signs of the disease. To date, about 100 vaccinated animals have entered the milking herd. One developed clinical disease and was culled.

- In 1997, the herd ELISA test found eight of 57 animals positive. In 2003, fecal culture found three of 55 vaccinated animals positive. All three were among the first 10 heifers vaccinated.

- Prior to vaccination, five to six replacement heifers were purchased each year. None had been purchased since vaccinated heifers entered the milking herd.

- Prior to vaccination, rolling herd average fluctuated. It rose when springers were purchased, then

decreased slowly. There has been a steady rise in herd average since vaccinated heifers started entering the herd.

Randy's herd is not one of the herds that is culture negative within five years. However, it is headed in the right direction. Vaccination helped Randy stay in business by reducing the number of cows lost to Johne's. At the same time, it has helped reduce the number of infected cows. His herd is not full of carriers. The environmental load of the organism on his farm has been greatly reduced. Within a few more years, his herd should be culture negative for Johne's.

Vaccination should not be a stand-alone procedure. It should be used along with other Johne's-control management practices. Each will enhance the other.

There have been many different approaches to control Johne's. Some, such as "risk management" and "test and cull," show promise, especially in the low and moderately infected herd. In the heavily infected herd, I believe there is no other management plan that has the track record of vaccination. 