

Center Helps Farmers Stop Johne's Disease

Editor's note: Last week in *Lancaster Farming* we introduced readers to a new avian health test facility newly constructed by the University of Pennsylvania's New Bolton Center. This week we'll explore the work being conducted by center scientists to test for Johne's disease and how that work may help farmers.

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(This is the last of a series.)

KENNETT SQUARE (Chester Co.) — Johne's disease is costing farmers a lot of money — millions of dollars per year — and they're not even aware that it's affecting their herds.

"Less than 25 percent of the farmers in the state are not aware that their cows are infected on their farm," said Dr. Robert H. Whitlock, of the University of Pennsylvania's New Bolton Center.

The center, in cooperation with Penn State and the Pennsylvania Department of Agriculture, has been instrumental in providing the necessary research, tracking, and treatment of Johne's disease in this area. Breakthroughs in diagnostic testing capabilities allows the center to detect three times as many animals as the current test run by other laboratories.

Johne's disease affects all types of cattle. Of particular concern, especially in counties such as Lan-

caster and Lebanon (two of the highest dairy producing regions in the country), are the dairy cattle affected and how readily the disease can be passed on to calves.

No treatment

"There's no known practical treatment for Johne's disease," said Whitlock. "That's the bad thing."

The disease is spread through manure. The bacteria is ingested and attaches itself within the cattle's intestinal tract. As a result of the infection, cattle do not absorb feed. The nutrients, including energy and protein, are lost.

The animal's intestine thickens and they lose energy. Weight loss and diarrhea occurs. And the disease worsens, resulting in death.

There are tremendous economic losses associated with Johne's disease. The work the New Bolton Center has done in diagnosing and helping producers rid the disease from their herds may help save farmers millions of dollars.

Sent questionnaires

Previously, the research team sent questionnaires to more than 400 farmers in the state. The study followed cows to slaughter, and, as part of the study, the center examined fecal and tissue samples.

Many farmers filled out the questionnaire and returned it. The results were surprising.

Of the positive findings, many of the farmers did not even know they had Johne's disease on their farms, according to Whitlock.

"Cows with early Johne's dis-



Dr. Robert H. Whitlock, Marilyn M. Simpson professor of equine medicine at the New Bolton Center, examines a culture of Johne's bacteria in the lab. According to Whitlock, there is often a source of frustration for the farmer or veterinarian to quickly receive results of a test, because the bacteria take so long to grow. "The research on the disease has been aimed at trying to answer some of the questions about Johne's disease," said Whitlock.

ease don't show any clinical signs," said Whitlock. "They became infected when they were

young calves, usually in the first few weeks of life, and they don't show any clinical signs."

Disease mistaken

The symptoms of Johne's disease, which include weight loss and diarrhea, don't appear until 2 to 10 years after the animal is born. The disease could have been mistaken for general lameness or failure to breed back, and could have been "silent" on the farm for a number of years.

The disease is transmitted through the manure, which contaminates the feed and the milk. The calves ingest the contaminated feces and the bacteria reside in the

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intestinal tract, where the organism slowly multiplies.

The bacteria takes 3 to 4 months to grow. According to Whitlock, there is often a source of frustration for the farmer or veterinarian to quickly receive results, because the bacteria take so long to grow.

"The research on the disease has been aimed at trying to answer some of the questions about Johne's disease," said Whitlock, including establishing the "gold standard," the fecal test, which is the most reliable way of finding out if an animal has been infected. (Blood tests report too many false positive results, according to Whitlock.)

Not as sensitive

"The problem with the fecal test," said Whitlock, "is that it is very specific but it's not as sensitive." Whitlock said the sedimen-

tation test detects "perhaps 10-15 percent" of the cows that are actually infected.

"The test we currently have in place here will detect three times more cows that are infected, approximately 40 to 50 percent," he said. "Our research will continue to look at ways to improve the sensitivity of fecal culture or other tests to detect cows that are infected but that we currently cannot detect."

The highly sensitive test was developed from work pioneered by the Animal Disease Research Institute in Ottawa, Canada. They recommended to New Bolton Center that "we evaluate a centrifugation technique, which concentrates the organisms in the sample.

"So we did that," Whitlock said, "and found that it did increase the sensitivity three times. We're currently evaluating other ways to further increase the sensitivity of the culture test, up to 5 or 10 times compared to the standard sedimentation test available now."

'Farmers need to be encouraged to get the calves out of the barn, so that there's no contact with the adult cows, because it's the adult cows that are shedding the organism in the manure.'

Access to records

The center is working closely with the Pennsylvania Department of Agriculture in Summerdale, Pennsylvania. The lab provided the center with access to records on farms that were tested positive for the disease.

About 20 farms agreed to participate in a research project on Johne's disease using their herds as part of the research. The researchers use the information to make recommendations on how the farmers can reduce the prevalence of Johne's disease on their farms, said Whitlock.

"The goal is to come up with a set of recommendations that we can provide to farmers in the state if they have Johne's disease, so farmers can work toward a certified-free status," he said.

The major recommendations the center has found to date is for farmers to separate the newborn calf as quickly as possible from the dam.

Research indicates that the bacteria are present in the infected cow's milk.

Calves out of barn

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Conditions Best For Newborns At Center

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KENNETT SQUARE (Chester Co.) — Most doctors would agree that the best place to have a Cesarean section (C-section) on a birthing dam would be the hospital.

The difference is obvious: It is better for the mother and the newborn calf to undergo the trauma of birth at an animal hospital, which has the proper facilities and medical care, than at the farm.

Surgeons at the University of Pennsylvania's New Bolton Center agree.

"The difference is that the conditions are much better here," said Dr. William Donawick, professor of surgery at the George Widener Hospital For Large Animals at New Bolton Center. "We have the help, we have the cow restraints, and we have special equipment in case there's an emergency that arises."

A special emergency staff remains on-call at the hospital on a 24-hour basis. The hospital arranges for C-section delivery on cattle with the farmer.

Cesareans are grouped into two categories of need, according to Donawick. One category is difficult births, where the calf cannot pass through the dam's birth canal, or where a calf is stillborn and the dam cannot deliver the fetus on her own. The other is an elective C-section where the surgeons believe it is easier and safer for the newborn and the mother.

"At New Bolton Center, we have extra people. We have all these extra things so that the risks to the dam and calf are much less," he said.

The "hospital setting" is best for both dam and calf. The surgery is almost exactly the same as human C-sections.

Overall, the center is performing fewer C-sections this year than



Dr. William Donawick, professor of surgery at New Bolton, recently performed surgery on a Holstein calf at the center. It is better for the mother and the newborn calf to undergo the trauma of birth at an animal hospital, which has the proper facilities and medical care, than at the farm. "The difference is that the conditions are much better here," he said.

any other. The reason they are doing less, according to Donawick, is because cattle prices are

down "and that makes a difference as far as the potential value of the young animals."