

# Johne's Update: Answers through research

Editor's note: Johne's disease is of growing concern to more and more dairy farmers, and is the subject of much recent research. This article is the first of a two-part series to up-date farmers on research progress and current knowledge about Johne's.

**NEW BOLTON CENTER**—Will my cows contract the debilitating Johne's disease? How common is it in Pennsylvania herds? Could my cows already be harboring the paratuberculosis organism that causes Johne's? And what are the economic consequences of Johne's if it's already in my herd? You, as a dairyman want to know the answers to these questions.

In a few short months, the dairy

primary concern of Dr. Whitlock and the other members of the Pa. Dept. of Agriculture funded project. Other members of the research group include Dr. Larry Hutchinson, extension veterinarian from Penn State and researchers at the National Animal and Disease Laboratory in Ames, Iowa. Their three-year study began in Oct. 1983.

With one year of the project completed, Whitlock isn't ready to give definitive answers to the plaguing questions about Johne's, but he is prepared to describe the extensiveness of the research and what this could mean for Pa. dairymen.

"I'm not trying to be self-centered or anything, but we seriously think our study is

crucial to develop these other diagnostic tests.

Whitlock emphasizes sensitivity and specificity as the important characteristics of a diagnostic test.

Most dairymen are aware of the drawbacks of the fecal culture that is now used to diagnose Johne's—a lag time of several weeks is involved in obtaining results.

Whitlock explains why reliable tests need to be specific, that is able to show paratuberculosis and not mistakenly some similar organism, and sensitive, that is able to pick up Johne's even if only a small number of the organisms are present in the animal.

"The fecal culture, for instance, is specific—if the test comes out positive then the paratuberculosis organism really is there. But the fecal culture is not a particularly sensitive diagnostic test—it will only detect Johne's about one third of the time," comments Whitlock.

The blood, tissue, and fecal samples from the 1500 cull cows will give Whitlock and his fellow researchers, which include two full-time and one part-time technician at New Bolton, an opportunity to develop these new diagnostic tests.

There are five blood serum tests that they are using on the blood samples and Whitlock is hopeful that one or a combination of these will have the necessary specificity and sensitivity for use by veterinarians to test animals suspected of Johne's.

## Economic consequences

Of those 1500 slaughtered cull cows, how many were Johne's positive?

"We found the paratuberculosis organism in about 10 percent so far," says Whitlock. But more information about the prevalence of the disease will be gathered in the continuing phases of the project, which focus on learning as much as possible about the disease so that the question of total economic loss can be dealt with.

Whitlock emphasizes that this is not merely the problem of economic loss from the cows that show clinical signs of the infection and must therefore be culled. They're just as concerned in their study with the economic consequences of the sub-clinical cases.

It's apparent, explains Whitlock, that many cows are carriers of Johne's yet never develop into acute cases with the resulting diarrhea, emaciation, and eventual death. Previous studies have shown that these subclinical carriers of Johne's may have increased susceptibility to mastitis, decreased fertility, and lowered milk production.

To gain more definitive answers about the economic consequences, extensive information is being gathered in this three-year study. In the just-completed phase one, the researchers were able to identify each of the 1500 cows and are following up on the 600 or so that are from Pa. by sending out questionnaires to the former owners of the slaughtered animals. They are gathering information about all of the cows, whether positive or negative Johne's.

The questionnaires ask all sorts of questions about the cow, about age, production and breeding records, health and management conditions, and other items about the herd that she came from. To date they've had about a 60 percent rate of return on the questionnaires.

## Dairyman can help

"If anyone has received one of these questionnaires, it will be a tremendous help to us if you do take the time to fill it out and return it," reminds Whitlock. "Even five or six more forms that we get back will help us a lot in evaluating the problem." And he reminds farmers that they'll be helping themselves by helping the dairy industry.



Dr. Whitlock examines a Johne's infected heifer. Johne's disease usually doesn't appear clinically until after two years of age, but this 16-month-old heifer is severely emaciated. Plasma will be taken from the animal to be put in an antibody bank that is used for Johne's research at the Animal and Disease Laboratory in Ames.

The purpose of gathering information on both the positive and negative testing animals is to compare the two groups. If significant differences are discovered on one or more items, such as body weight, for instance, or occurrence of mastitis, this may be a clue to other effects of Johne's and will deserve more research.

The information gathered in phase one is only the beginning.

Phase two, which has already begun, is to do herd studies to gather even more information that might prove useful in determining the incidence and spread of Johne's.

Next week read about phase two of the Johne's research project, about finding Johne's positive animals, and about management practices that can be undertaken to help curtail the spread of the disease.

## Dairyrea renames directors

**SYRACUSE** — Five area dairymen have been re-elected to the board of directors of Dairyrea Cooperative, the Northeast's largest farm-to-consumer dairy marketing cooperative.

The dairyman directors re-elected to the cooperative's board include: David Hardie, Lansing, N.Y.; Peter Schuyler, Jr., Cobleskill, N.Y.; Beriah Willson, Vernon Center, N.Y.; Duane Hartzel, Slippery Rock, Pa.; and August Knispel, Pittstown, N.J.

Hardie is Director of Dairyrea's District 4. He was a subdistrict president for six years before joining Dairyrea's Board, and was also a member of Dairyrea's director on the O-AT-KA Board in Batavia, New York and is a Batavia, New York and is a director of Dairy, Food and Nutrition Council. He is a Farm Bureau member and has been a county Farm Bureau president. Hardie farms 600 acres with his son in Lansing.

Schuyler, Director of District 13, was first elected a Dairyrea director 21 years ago. He is a director on the Syracuse-based American Dairy Association and Dairy Council and is also a director of the National Milk Producers Federation. He has served as president of the Schoharie County Farm Bureau and president of Schoharie County DHIA. Schuyler farms 500 acres in Cobleskill and has a herd of purebred Ayrshires.

Willson has served as District 10

Director since 1975. He was elected to Dairyrea's Executive Committee last year and was recently appointed to the New York Dairy Promotion Advisory Board. He has served as director and president of the Vernon local cooperative as well as sub-district president, and was recently honored as Farmer of the Year in Oneida County. Willson and his sons farm 500 acres and milk more than 100 Holsteins.

Hartzel has been Director of Dairyrea's District 1 since 1969. He has served as a member of the Resolutions Committee and as sub-district president. He was recently appointed to the 15-member Advisory Board for the Pennsylvania Milk Promotion and Marketing Program, and is also a member of the Pennsylvania Farmers Association. In partnership with his sons, Stephen and George, Mr. Hartzel farms 378 acres in the Slippery Rock area.

Knispel, who became a Dairyrea member in 1962, is Director for Dairyrea's District 7. He has served as sub-district president as well as president and secretary-treasurer of the Pittstown local. Knispel was recently elected president of the Garden State Milk Council and participates in the newly developed "Agriculture In The Classroom" project. He also serves as mayor of the Franklin Township and sits on the New Jersey Dairy Industry Advisory Council. Knispel still runs the 300-acre farm on which he was raised.

## Dairy Exclusive

industry will be turning to Dr. Robert Whitlock of the Univ. of Pennsylvania's New Bolton Center for the answers to these questions. As the coordinator of a three-year collaborative project on Johne's, he has already collected a significant amount of data on the disease.

And collecting data has to be step one in combating Johne's because so little is known about the disease.

If you've had a positive Johne's cow in your herd, you know what a threat the disease is. You probably weren't aware of the disease until it reached its acute clinical stage, when the cow had severe diarrhea and became increasingly emaciated, although she continued to eat normally.

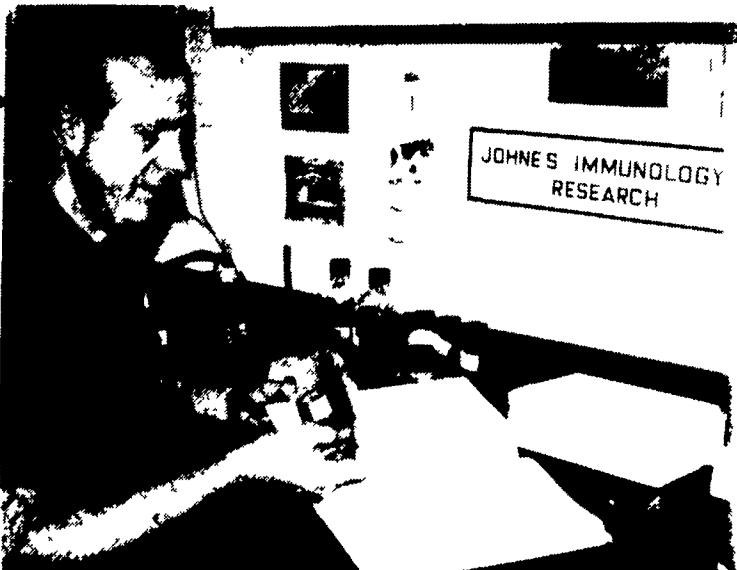
At that stage, and at any stage for a cow that tests positive for Johne's, the only choice is to cull her, because the disease which is so difficult to diagnose also has no known cure.

What members of the dairy industry fear are the cows who are infected, but aren't showing the clinical signs of Johne's disease. These undetected cows are not only transmitting the paratuberculosis organism to other animals, particularly young stock, they are also an economic liability because of resultant decreased production, decreased fertility, and increased susceptibility to mastitis.

To begin answering the ultimate question of the economic seriousness of Johne's, at least two things must first be achieved. First, quick and reliable tests must be developed to diagnose the disease, and, secondly, a survey of Pa. cows must be undertaken to get a figure on just how widespread the disease is in the 16,000 dairy herds in the state.

### Three-year study

Achieving these two goals is the



Here Dr. Whitlock displays a plate used in one of the blood tests being developed to diagnose Johne's. More sensitive and specific diagnostic tests are an important goal of the Johne's research.