

Significance

The single calf pens are microenvironments within the naturally ventilated barns. In winter, natural ventilation of barns that averaged a calculated 18 changes per hour did not provide for clean air in the pens. Increased ventilation rates effectively lowered airborne bacterial concentrations in the alleys, but solid fronts and hovers result in the accumulation of airborne bacteria within the pens. The accumulation of high pen bacterial counts was associated with increasing preva-

lence of calves with respiratory disease. The solid fronts and hovers are installed to prevent drafts and chilling, but it appears that supplying deep straw bedding in which the calf can “nest” is a preferable strategy. Although straw bedding was associated with higher pen air bacterial counts, the thermal control benefits of nesting appear to outweigh the airborne bacteria associated with straw. While enclosing the pen with solid fronts or covers should be avoided, a single solid barrier between calves is associated with decreased prevalence of respiratory disease.

Fecal Shedding of *Mycobacterium avium* subsp *paratuberculosis* in Calves: Implications for Disease Control and Management

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Introduction

It is widely accepted that most infections caused by *Mycobacterium avium* subsp *paratuberculosis* (MAP) occur *in utero* or in the neonatal animal. The challenge, however, has been to demonstrate and detect the infection in the young animal, as the onset of clinical signs often takes several years. Earlier detection may allow for more prudent animal management decisions. Two primary objectives of this study are to determine whether fecal shedding of MAP can be detected in naturally infected young animals and if there is a relationship between MAP-shedding cows and fecal shedding in their offspring. This was a longitudinal, prospective study of two years' duration with more than 1,600 samples. It is a cooperative study with MSU, USDA, Michigan Dairy Association, private practitioners and dairy producers.

Materials and Methods

This study looks at dairy calves of four age groups from seven herds scattered throughout lower Michigan with varied MAP prevalence and management styles. Fecal samples are obtained from ten calves in each of the four age groups. Calves from positive dams (fecal or ELISA) are targeted; calves from test-negative dams fill out the group and the test interval is three months. Se-

rial testing “high risk” calves (from positive dams) is a priority. The TREK[®] liquid culture system is the test used for fecal culture. Positive fecal cultures are confirmed with acid fast staining and IS900 real time PCR.

Results

Preliminary results are in the early stages (240 samples), but we have detected shedding in eight calves representing all four age groups from five of the seven farms. Also, five of the positive fecal cultures were seen in calves with a test-positive dam.

Significance

One conclusion that can be drawn at this time is that we apparently are able to detect shedding of MAP in naturally infected dairy calves using the TREK liquid culture system. As to the relationship between the culture-positive calf and the status of her dam, the numbers are too small to determine at present. The intended significance of this study is to help determine if this method may be used as a detection tool to identify some Johnes-infected calves at a younger age than was traditionally thought possible. If this is borne out, can the results be used for culling strategies or housing decisions on the infected dairy?