Performance of Lime, Chlorhexidine Gluconate Solution, Bleach Solution and Areation of the Soil against Mycoplasma bovis in Recycled Sand Bedding, a Four Year Study

McGehee, Cady (School: Toth Arpad High School)

Mycoplasma bovis is an extremely costly disease in the dairy industry totaling about $120 million among US dairy farms in the loss of milk alone. Mycoplasma bovis can cause mastitis, poly-arthritis, otitis media, and respiratory infections, it is also immunosuppressive. In a study I conducted last year I found that a large number of the soil samples tested positive for Mycoplasma bovis and the soil is a prime source for calves to pick up bacteria when they are born. With this knowledge I have decided to test a variety of ways to treat Mycoplasma bovis in soil. The five treatments are a 2% Chlorhexidine Gluconate solution, lime, 10% bleach solution, aeration of the sand and distilled water. I collected sand bedding from Maternity barns and used 5 grams of sand per .5 ml of solution. With the aeration i simply stirred the sand and exposed it to the air. After 30 minutes of treatment I then rinsed the sand with distilled water and plated the samples. After ten days of incubation I found that the ten percent bleach solution was the most effective course of treatment in the soil. In 4 samples there was no Mycoplasma bovis present after treatment. In sample 3 there was a single colony present. Two percent chlorhexidine gluconate solution had an average of 1.6 colonies present. Two samples were tested negative after treatment. The performance of the lime was less effective with an average of 38.6 colonies present after treatment. Aeration of the soil and a treatment consisting of only distilled water had no effect on the samples compared to the control. All of the samples from the two treatment groups had too many colonies to count which is a colony count of 500 to 1000. The study did not support ed only a portion of my hypothesis.