

were third-generation cephalosporins (28.1% of treated preweaned heifers), trimethoprim/sulfa (19.2%), and aminoglycosides (14.9%). Respiratory disease affected 8.2% of weaned heifers. The primary antibiotics used for respiratory disease were florfenicol (32.2% of treated weaned heifers) and macrolides (29.3%). The percent of cows treated with antibiotics for common diseases were 20.8% for mastitis, 7.8% for reproductive, 3.7% for lameness, 2.7% for respiratory and 1.2% for digestive disease. On operations that treated cows, third-generation cephalosporins were used to treat cows for mastitis (50.8%), lameness (59.6%), respiratory disease (78.3%), or digestive problems (61.9%).

Significance

Ionophores are frequently used as feed additives on dairy operations, but this class of antibiotics is not listed as “medically important” by the FDA and, thus, isn’t affected by the recent FDA guidance documents. Third-generation cephalosporins, trimethoprim/sulfa, and macrolides are all considered critically important for use in humans. However, these drugs are being used in the dairy industry primarily for disease treatment purposes, and relatively few cattle are treated with the drugs.

Exploring herd-level management factors and culling rates in Québec dairy herds

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Introduction

Relationship between longevity and health or reproductive performance at the cow level is well demonstrated in the dairy literature, but this association might not hold true at the herd level. Many herd-, farm-, and cow-level components are part of the culling decision. The objectives of this study were to: 1) quantify culling rates of Québec dairy herds, and 2) investigate if Québec dairy farms could be differentiated based on herd-level factors such as management, reproduction, production and health indices, and explore their relationship with herd culling rate.

Materials and Methods

A retrospective study was conducted on data from dairy herds in Québec, Canada, by extracting their health and production data. Data were extracted for all lactations taking place between 2001 and 2011. A total of 432,733 lactation records (from 156,409 cows and 763 herds) were analyzed. Thirty herd-level variables were aggregated for each herd/year of follow-up and their relationship investigated by Multiple Factor Analysis (MFA).

Results

The overall culling rate was 31.6% with a 95% confidence interval of [31.2, 32.1]. The explained variance for

each axis from the MFA was very low (first and second axis: 13.7 and 12.6%, respectively) suggesting that there was no relationship among the groups of variables. Associations were found between culling rates and herd-level variables such as seasonality, proportion of primiparous cows, calving interval, 21-day pregnancy rate, days to first service, and average age at first calving.

Significance

Being pregnant is a cow-level protective factor against culling. We determined that herd reproductive performances as measured by calving interval and 21-day pregnancy rate were associated with culling rates. However, these were the only herd-level factors associated with culling while there are many cow-level risk factors. No association was found between culling rate and herd production performances (peak production, 305 day milk, fat, and protein production). The presence (and absence) of relations observed in this study stresses the significance of the peripartum period for the herd, and the prime importance of acknowledging the discrepancy between herd- and cow-level associations. Inferences at the group level should not be based on individual-level data.