

Research Summaries 3

Effect of the interval between calving and colostrum harvest on colostrum quality in dairy cows on a New York dairy

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Introduction

Colostrum management is one of the key factors in successful calf management. The estimated prevalence of failure of passive transfer in dairy heifer calves is still surprisingly high at 19.2%. In a recent study by Morrill and others, 30% of nationwide collected colostrum samples from dairy farms had immunoglobulin G (IgG) concentrations less than the industry-recommended 50 g/L. In recent years, an increasing amount of research in dairy cattle has focused on factors affecting colostrum quality including breed, age of dam, season of calving, volume of colostrum, and dry period length, whereas the effect of the interval between calving and first milking has only been addressed in a limited number of studies with small data sets. The objective of this study was to investigate the influence of the interval between calving and first milking on the colostrum quality.

Materials and Methods

Holstein and Holstein-Jersey cross cows and heifers calving between March and August 2014 on a 1,500 cow New York dairy were eligible for enrollment. Cows and heifers were moved to the maternity pen when birth appeared imminent. Calves were removed immediately after calving and data about date of calving, cow ID, time of calving, gender of the calf, and calving ease were collected. Cows and heifers were moved to the fresh cow and fresh heifer pens that were milked 3 times daily after calving. Colostrum from the freshened dams was collected in a variable period of 1 to 24 hours after parturition depending on cow health and ability to move the animal to the fresh pen. Time of milking as well as the volume of first milking was recorded using the on-farm software DairyPlan. Colostrum was collected into separate milking buckets in the parlor and a sample was taken from each. Samples were refrigerated and stored before analysis. Colostrum quality was estimated using a digital brix refractometer (Misco Palm Refractometer). Effects of the independent variables (time interval, morbidity,

and parity) on colostrum brix percent and colostrum volume were evaluated using two similar general linear model using MIXED procedures in SAS. All two-way interactions were tested. Least square means and respective standard error of the mean were estimated for all categorical main effects.

Results

A total of 462 animals were enrolled for analysis. First parity animals contributed to 44% of the colostrum samples collected while second and third parity contributed 25% and 19%, respectively. The herd had a stillbirth incidence of 8%, consisting of 5% heifer and 10% bull calves. When using a Brix refractometer recommended cutoff point of 20%, 85% of the samples were considered "good"; when using 22%, 70% of the colostrum samples were considered "good". There was no difference between interval time and colostrum quality ($P=0.24$). Parity was strongly correlated with volume of colostrum produced at first milking ($P<0.001$) where the greater the parity, the larger the volume of colostrum harvested at first milking (parity 1=5.8 L, parity 2=12.5 L, parity 3=12.1 L). Colostrum quality measured by Brix refractometer was significantly correlated with parity ($P<0.001$) with greater parity animals having higher colostrum Brix readings (parity 1=23.4%, parity 2=24.1%, parity 3=24.9%, parity 4=26.7%).

Significance

In this trial, interval from calving to harvest was not associated with colostrum quality. It is hypothesized that because this farm has a good overall colostrum management, an increased harvest interval did not affect the quality. This implies that the colostrum quality on this farm, regardless of time of colostrum harvest, is sufficient to provide adequate immunoglobulins to newborn calves if fed appropriately. As in other investigations, greater parity animals produced higher quality and greater volumes of colostrum.