Variation in Milk Production Within Dairy Herds

Author: Sara Finney

Major: Animal Science

Project Advisor: Maurice Eastridge

Understanding the variation of milk yield on dairy farms may assist dairy farmers in improving profitability. This study was conducted to determine the variation among farms with different levels of rolling herd average (RHA) for annual milk yield. Data from Dairy Herd Improvement were collected yearly from 2003 through 2011. The data included yearly RHA for milk, fat, and protein for each herd in Ohio and the annual production of milk, fat, and protein by individual cows having completed a lactation within the respective year for each herd. Dairy farms having at least 50 cows of either Holstein or Jersey were used, and individual cows must have completed a lactation of over 290 days in milk. Cows either above or below 3 standard deviations from the average milk yield were eliminated. The individual cow data were analyzed with SAS to calculate the herd average and standard deviation (SD) for yields of milk, fat, and protein. These data were then merged with the RHA data by herd. Quartiles within each year were determined using PROC Univariate within SAS and were then used to classify herds into categories for yields of milk, fat, and protein. For Holstein herds, the SD within each quartile RHA class was (low to high RHA milk) 1515, 1594, 1676, and 1801 kg and coefficients of variation (CV) were 17.5, 16.6, 16.1, and 15.0%, respectively. The SD for Jersey herds was 1060, 1239, 1262, and 1378 kg and CV of 17.4, 17.5, 16.6, and 16.7%, respectively. Variation within herds increased ($P < 0.01$) as the RHA increased, but the CV decreased ($P < 0.01$). Variation in milk yield within herds also was affected by year. Further analysis of this variation will occur with the aim to provide recommendations to minimize the variation of milk yield on dairy farms.