A Comparison of Pregnancy Detection by Palpation and a Blood Test in Dairy Cattle

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Introduction

The purpose of this project was to compare the results of a blood test for bovine pregnancy with pregnancy detection by rectal palpation by veterinarians in dairy herds using artificial insemination. The blood test evaluated was a commercially-available enzyme-linked immunosorbent assay (ELISA) which tests for pregnancy-specific protein B.

Materials and Methods

The study was conducted in the Fall of 2006 and early Winter 2007 in 12 dairy herds. Blood samples were collected at the time palpations were routinely performed and submitted to BioTracking in Moscow, Idaho. Blood test results were received electronically. Palpations were performed between 35 and 280 days post-insemination by 5 experienced dairy veterinarians. Palpation results were recorded on paper records and entered into DairyComp 305 on farms or into a database prepared for the study.

Results

Out of 417 animals diagnosed open by palpation, the blood test results were: 83.2% open (n=347), 5.5% open recheck (n=23), 3.8% pregnant recheck, and 7.4% pregnant (n=31). For 569 animals diagnosed pregnant by palpation, the blood test results were 1.9% open (n=11), 1.2% open recheck (n=7), 0.7% pregnant recheck (n=4) and 96.1% pregnant (n=547). The discrepant results were further investigated to determine possible explanations for the differences. Among 11 animals that were pregnant by palpation, but open on the blood test, 6 were subsequently recorded as in heat, checked open or aborted, 2 were confirmed pregnant and 3 were unknown. As most of the animals in the study where enrolled in synchronization protocols, 27 of the 31 cows which were diagnosed open by palpation but pregnant by the ELISA were administered prostaglandin after palpation, making it difficult to determine the causes of the different test results. However, after adjusting for days since last heat, animals that were blood test pregnant and palpation pregnant had significantly higher ELISA optical density values than animals that were blood test pregnant and open by palpation ($p<0.0001$). This suggested that some of the discrepancies may have been attributable to cows that were previously pregnant and had pregnancy specific protein B concentrations that were waning but still above the cut-off value for pregnancy. Approximately 5% of animals tested with the ELISA were given a "recheck open or recheck pregnant" result, compared to 0.1% of animals tested by palpation.

Significance

There was quite high agreement between the blood test and palpation results, but neither test was perfect. The economic impact of a few days delay in receiving results and a larger number of rechecks for the blood test would need to be considered when deciding which method to use.