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Theme 9 | Ruminant nutrition and production

Season effect in complete blood count in family milking herd

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The complete blood count (CBC) analisis is a clinical tool with many advantages, it can be apply in production systems for evaluation of the balance of blood elements to diagnose infectious diseases, inflammation, anemia, presence of hemoparasites, intoxications, endocrinopathies among other metabolic conditions. The objective of this study was to determine the blood components in cows in family milking herd production system in three seasons. The study was developed in the district of Etla, Oaxaca, Mexico, with 185 cows of different body condition (less than 2.5, 2.5 and over 2.5) in three seasons of the year: spring-summer (SS), Autumn (AU) and winter (W). To achive this 5ml of Blood from coccygeal vein blood was drawn, the samples were stored in vacuum system tubes with EDTA at 4°C until processing in the laboratory. The samples were evaluated on an hematology analyzer through impedance method, hematocrit, fibrinogen and total proteins were obtained by the microhematocrit technique and incubation of plasma in wather bath, and then manual refractometer reading. Cellular and differential leukocyte morphology analysis was performed on blood smears stained with Wrigth. The response variables were hematocrit (HTO L/L), hemoglobin (HG g/L), erythrocytes (ER $X10^{12}$/L), mean corpuscular volume (MCV fL), average glomerular hemoglobin concentration (CGMH g/L), platelets (PLAC $X10^9$/L), Total Protein (TP g/L), fibrinogen (F g/L) PT/F ratio (g/L), total leukocytes (TL $X10^9$/L), Neutrophils (NE $X10^9$/L), lymphocytes (LI $X10^9$/L) monocytes (MO X10 ^{9}/L) and Eosinophils (EO $X10^9$/L). The data was subjected to analysis of variance through a generalized linear model, to detect differences between means was used the test of minimum squares ($P<0.05$). Regardless to the season of year, only TP and NE showed a different behavior ($P<0.05$).TP was lower in winter (SS: 81.6 ± 2.7^a; AU: 75.7 ± 3.6^a, W: 69.9±2.6^b), Unlike NE was higher in winter (SS: 2.9 ± 0.6^b, AU: 3.7 ± 0.8^{ab}, W: 5.3 ± 0.6^a). The diferent values of TP can be due to a greater availability and quality of forage in SS. For N we interpret neutropenia associated with an active chronic inflammatory process confirmed with MO (SS: 1.8 ± 0.3) and with the PT/F ratio (SS 17.3 ± 4). In AU and W the finding was neutrophilic and due to the ratio PT/ F AU: 30.7 ± 5 and W: 20.9 ± 4 plus MO (AU: 2.2 ± 0.4, W: 2.1 ± 0.3) resulting in chronic inflammatory process diagnosis, that can be associated with parasitosis EO 0.9±0.8. In all seasons the cows had anemia HTO 0.28 ± 0.4, HG 97±16.8, ER 5.2 ± 1.1, VGM 31 ± 4.3 and CGMH 346 ± 33, according to erythrocytic indices it can be due to trace minerals deficiency. In conclusion the time of the year influences the concentration of TP, which has an impact on the degree of anemia and immune response.

Keywords: Complete blood count, body condition, Dairy cows