

## **Abstract:**

The association between serum antibody titres to *Theileria parva* in calves and potential explanatory factors were examined in a longitudinal observational study that was conducted in 5 cohorts of female calves with a total of 225 calves on 188 smallholder dairy farms. The farms were distributed in five agro-ecological zone (AEZ)-grazing strata namely; Upper Midlands UM 1 zero-grazing, UM 1 open-grazing, UM 2, UM 4 zero-grazing and UM 4 open-grazing. The calves were visited within the first two weeks of life and thereafter at biweekly intervals up to the age of 6 months between March 1995 and August 1996. During each visit, a whole blood sample for sera preparation was collected from each calf. Calf management practices in place on the farm during the visit such as grazing system, housing, and tick control were recorded in closed-format questionnaires. Calf serum antibody titres to *T. parva* were estimated using the indirect enzyme-linked-immunosorbent assay (ELISA) test and expressed as percent positivity (PP). Calves were considered as having positive antibody titres if they showed the presence of maternally-derived antibodies following the ingestion of colostrum or sero-converted to *T. parva* parasite after a bite from an infected tick. The overall mean antibody titres were: 10.8 and 15.9 in UM 1 zero grazing and open-grazing respectively; 8.1 in UM 2 and 17.4 and 30.4 in UM 4 zero-grazing and open-grazing respectively and these were significantly different ( $p < 0.05$ ). Mean calf antibody titres were associated mainly with calf level factors that included, AEZ-grazing strata, maternal antibodies, calf housing, age of calf, AEZ-grazing strata and calf age interaction, calf sickness and occurrence of ECF ( $p < 0.05$ ).