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Title: A Quantitative Risk Assessment of Bovine Theileriosis entering Luapula Province from Central Province in Zambia via live cattle imports from traditional and commercial production sectors

Author: C. Makungu K.K. Mwacalimba

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Corresponding Author: Dr. Kennedy Mwacalimba, Ph.D.

Corresponding Author's Institution: Former Faculty The University of Zambia, School of Veterinary Medicine

First Author: Chitwambi Makungu, BVM, DLSHTM, MSc

Order of Authors: Chitwambi Makungu, BVM, DLSHTM, MSc; Kennedy Mwacalimba, Ph.D.

Abstract: Theileriosis or East Coast Fever (ECF) is an important livestock disease widespread in Zambia except for some provinces such as Luapula. This freedom status has been achieved due to strict livestock movement regulations that only authorise cattle imports from commercial farms implementing strict ECF control regimens. Recent increases in both the demand and price of beef in Zambia are stimulating a policy change towards a more inclusive inter-provincial trade in live cattle. This may also encourage the introduction of breeding cattle from high production pastoral sectors such as Central Province to stimulate the beef industry in disease free low production areas such as the Luapula Province. To estimate and compare the risks linked with those potential introductions of cattle from the traditional or commercial production sectors of the Central Province, a quantitative risk assessment model was developed.

This risk comparison was necessary because the traditional livestock production sector accounts for over 79% of breeding cattle trade in Central Province but is characterised by minimalistic tick-borne disease control and a higher prevalence of ECF. We estimate that should the importation of breeding cattle from Central into Luapula Province be permitted, we could expect to import ECF by the introduction of infected animals at a median rate (5th and 95th percentiles) of every 0.44 years (0.12, 2.60), from the traditional sector compared to every 3.57 years (0.37, 103.6) from the commercial sector. Infected ticks would be expected to enter every 3.46 (0.66, 43.8) years via traditional cattle imports. These risks are strongly influenced by the prevalence of infection, performance of pre-transport screening tests, and the effectiveness of pre-transport tick cleansing. This assessment is expected to provide a model for tick borne disease risk assessments in similar settings, as well as inform ECF control, cattle trade, and stock movement policies in Zambia.

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