Acaricide resistance in Rhipicephalus appendiculatus ticks collected from different farming systems in Zimbabwe

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Abstract

The larval packet test (LPT) was used to investigate resistance in Rhipicephalus appendiculatus ticks to the amidine (amitraz) and organophosphate (chlorfenvinphos) chemical acaricides in different farming systems in Mashonaland West Province in Zimbabwe. The study results showed emerging resistance (ER) to amitraz in small-scale and commercial farming systems. The tick populations in communal farming systems were susceptible to both acaricides. A similar trend was observed for chlorfenvinphos, where ER was observed in the small-scale farming systems compared to communal and commercial farms. Furthermore, resistance ratios (RR) were higher for amitraz as compared to chlorfenvinphos. This study suggests that management practices, acaricide formulations, applications on cattle, intensity, and frequency of use could be pre-disposing factors for the emerging resistance towards amitraz observed in R. appendiculatus ticks found in small-scale and commercial farming systems. Amitraz is the most common and frequently used acaricides in all farming systems, and hence, resistance is developing much faster than organophosphates. There is a need to investigate further acaricide use and management practices in Zimbabwe's cattle farming systems to develop practical strategies for prevention and management of tick acaricide resistance.