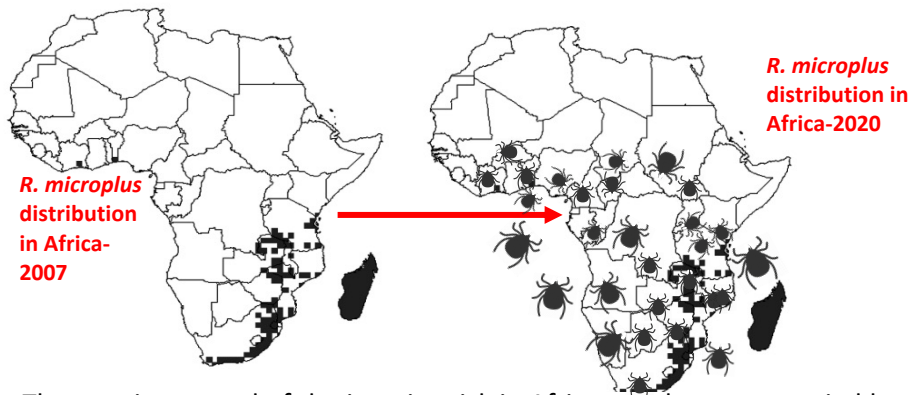


Research Background

- Tick-borne diseases (TBDs) are a major constraint to profitable livestock production, food and nutrition security and economic well-being of smallholder farmers in Africa¹.
- The invasive tick *Rhipicephalus microplus* is a highly efficient vector of tick fevers caused by *Babesia bovis*, *Babesia bigemina*, and *Anaplasma marginale* and has rapidly spread into many African countries over the last decade²⁻⁴.



- Infections associated with *B. bovis* can cause 70-80% mortality rates, high economic losses⁵ and high morbidities leading to low production of much needed milk and meat and decreased incomes.



- The ongoing spread of the invasive tick in Africa may be accompanied by the spread of *B. bovis*, which has already been reported in Kenya⁶

Strategies for controlling invasive ticks in Africa

Rhipicephalus microplus has been successfully controlled in Australia and USA through targeted integrated tick management (ITM) programs. African countries should design and implement different strategies incorporating the following approaches:

- Countries should use remote sensing and GIS to collect data on where invasive ticks and *B. bovis* occur and the eco-climatic factors characterizing these regions to assist in disease and tick distribution modelling.
- Countries to generate disease distribution maps to identify affected regions and guide region-specific management plans.
- States to map ticks and disease hotspots and develop risk assessment systems to predict disease outbreaks.
- States to regulate transborder movement of livestock to reduce mobility and dispersal of ticks and minimize spread of TBDs and babesiosis.

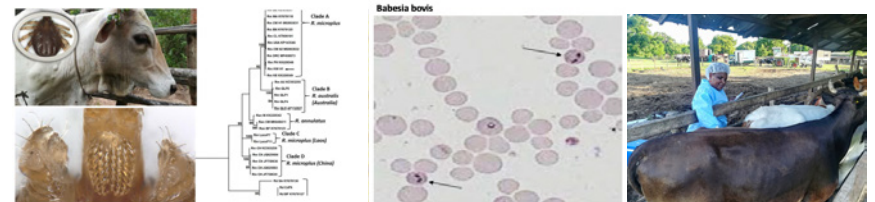


- States to establish disease screening centres at border entry points to monitor and control disease and tick spread
- States to introduce regular compulsory dipping/spraying programs at border points and institute inspection for compliance.
- Banning of ineffective chemicals from the market and enforcing rational use of effective chemicals to stop ticks from becoming resistant.
- States to train and build capacity in invasive tick identification, *B. bovis* detection, disease diagnosis and surveillance

Livestock Research, development and extension (RD&E) strategies

African countries must invest in livestock R&D to in order to successfully control and manage invasive ticks and looming fatal bovine babesiosis. This could be achieved through

- Training of TTBDs researchers to meet the severe shortage of such expertise in Africa
- Develop specific and sensitive diagnostic and epidemiological tools for invasive ticks and babesiosis surveillance
- Given that most African countries have limited resources, an easy-to-use, rapid point-of-care diagnostic and epidemiological tests that do not require electricity, instrumentation or specially trained personnel are needed.
- Establish and implement timely detection of *B. bovis* infection in cattle and diagnosis of fatal bovine babesiosis at border entry points to limit its spread and establishment.
- Provide specialist livestock extension services offering technical and informational support to farmers and pastoralists



- Develop sustainable vaccines to control invasive ticks and babesiosis
- Develop and implement evidence-based policies to guide babesiosis control and management.

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Challenges in control of invasive ticks in Africa

- Although recent findings show occurrence of the cattle tick in many African countries, the extent of spread within these countries remains unassessed.
- The introduction and spread of the invasive ticks has been attributed to uncontrolled trans-border animal movements and trade.
- Most countries have limited capacity for differentiation of *R. microplus* from the endemic *R. decoloratus* and *R. annulatus*.
- In most countries, diagnosis of TBDs is through observation of clinical signs, sometimes combined with microscopy, methods that are not specific or sensitive, especially in immune carrier animals and those with mixed infections.
- Most countries lack capacity, expertise and technologies for *B. bovis* detection babesiosis diagnosis and surveillance.
- Widespread resistance of ticks to commonly used acaricides.
- Wild animals are reservoirs of ticks and tick-borne pathogens. The role of African wildlife in maintaining *R. microplus* has not been established.



- No risk assessment, surveillance systems or control strategies for the invasive ticks and fatal babesiosis are available in most African countries