

PESTE DES PETITS RUMINANTS (PPR) SERO-SURVEY IN SHEEP AND GOAT HERDS OF NAMANGA, KAJIADO COUNTY, KENYA

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INTRODUCTION

■ Livestock assets are an important source of food and economic security for the 10 million people living in the Arid and Semi-Arid Lands (ASALs) of Kenya.

■ PPR is a highly infectious viral disease of sheep and goats that was officially reported in Kenya in 2006. The disease is associated with significant socio-economic losses due to the high case fatality rate.

■ Exposure to PPR virus through vaccination or natural infection results in a 3 year or life long immunity. PPR control strategies in Kenya began in 2008 with the implementation of a 5-year nation wide vaccination campaign. However, control measures have failed to prevent disease outbreaks especially in Northern Kenya.

■ A herd sero-prevalence of 60 to 80% stops PPR virus circulation and significantly reduces outbreaks in endemic areas.

■ A cross-sectional sero-survey was conducted between January and February 2014 with the overall aim of determining the antibody levels against PPR virus in sheep and goat herds from Namanga in Kajiado County. Namanga was identified as a high risk PPR zone. The study findings will inform PPR surveillance and vaccination control programmes.

STUDY OBJECTIVES

■ To characterise PPR disease control practices amongst pastoral communities of Namanga, Kajiado County.

■ To determine antibody prevalence levels against PPR virus and prevalence of gastro intestinal parasites in sheep and goat herds from Namanga, a high risk PPR zone.

■ To identify factors associated with PPR seroprevalence using statistical techniques.

RESULTS

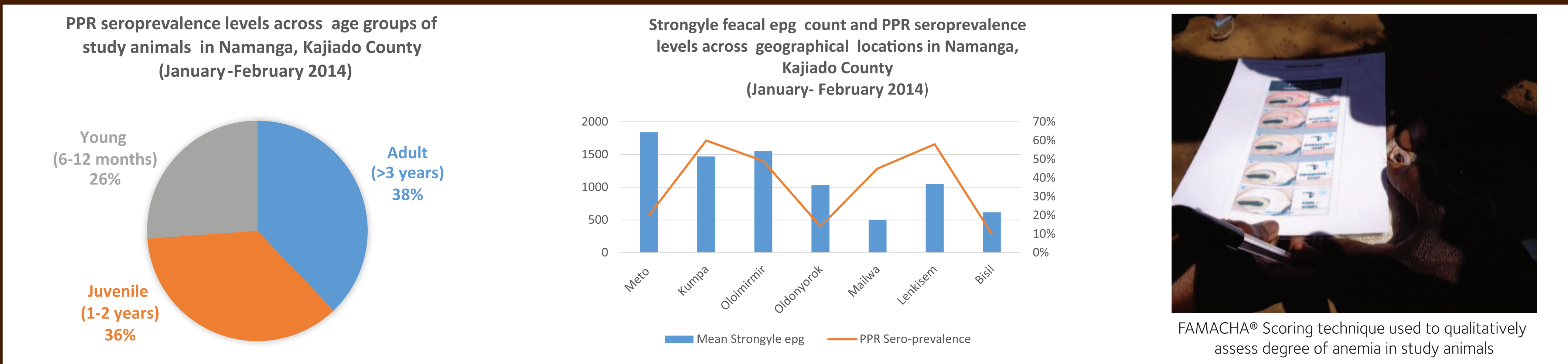
Small ruminant PPR disease control practices

■ Only 57% of livestock owners interviewed invested in the purchase of preventive vaccines for their sheep and goat herds. Vaccine purchase preference was for Contagious Caprine Pleuropneumoniae (CCPP), Sheep and Goat pox and Enterotoxaemia vaccines. Most (86%) small ruminant owners indicated that during PPR outbreaks they ensured their herds accessed PPR vaccines. The main challenge facing PPR vaccination programmes identified by 63% of livestock owners was the allocation of few vaccines and number of days to cover the large small ruminant population in Namanga. All livestock owners indicated that they regularly purchased and administered to their small ruminant herds 2 or more anthelmintic and antibiotic products.

■ Slightly more than half (58%) of livestock owners interviewed indicated they had access to veterinary services. However, only 40% reported incidences of disease occurrence in their small ruminant herds to animal health officials or local administration officers (Chiefs).

■ PPR was still considered a new disease phenomenon and therefore had no local name. PPR was often referred to as ‘Ngoroti’ or ‘Oludua’ which means persistent diarrhoea. Only 51% of small ruminant owners interviewed could correctly identify PPR clinical signs.

■ Based on perceived economic importance, PPR disease was ranked 4th to CCPP, helminthiasis and Contagious ecthyma (Orf) in goats while in sheep, PPR was not ranked instead helminthiasis, sheep pox, pneumonia and enterotoxaemia were ranked as the most important diseases that resulted in the highest production losses.



Prevalence of PPR antibodies and gastro intestinal parasites

■ The apparent PPR seroprevalence of study animals in Namanga was 37%. Factors significantly associated with PPR seropositivity were: 1. Age of animal 2. Geographical location of animals and 3. Access to PPR vaccine.

■ Gastrointestinal parasitism prevalence was 55% for coccidia parasite and 82% for helminth parasites. Prevalence of mixed infection with coccidia and helminths was 51%. The 4 factors significantly associated with strongyle faecal egg per gram (epg) count were; 1. Poor body condition 2. High FAMACHA® score 3. Clinical signs of diarrhoea and 4. Bilateral nasal discharges.

■ The average strongyle faecal epg count was 1,155. Haemonchus larvae were the most common helminth specie harvested from faecal culture. Livestock owners from Meto area reported past incidences of PPR outbreaks, however, laboratory analysis revealed that sampled animals from Meto had one of the lowest PPR seroprevalence levels but the highest strongyle faecal epg count of 1800.

■ The faecal strongyle epg was significantly and positively associated with FAMACHA® score. In addition, FAMACHA® score was significantly but negatively associated with Packed cell volume percentage (PCV%). This means that a high faecal epg count and a high FAMACHA® score of 4 or 5 was correlated with a low PCV% thus indicative of anaemia due to helminthiasis.

DATA COLLECTION AND ANALYSIS

– Ethical clearance was obtained from the University of Nairobi, Faculty of Veterinary Medicine, Biosafety, Animal use and Ethics Committee. In addition, livestock owners gave a verbal and signed consent to participate in the survey.

– 35 Sites sampled were purposively selected based on previous reports of PPR outbreaks from passive and participatory disease surveillance records.

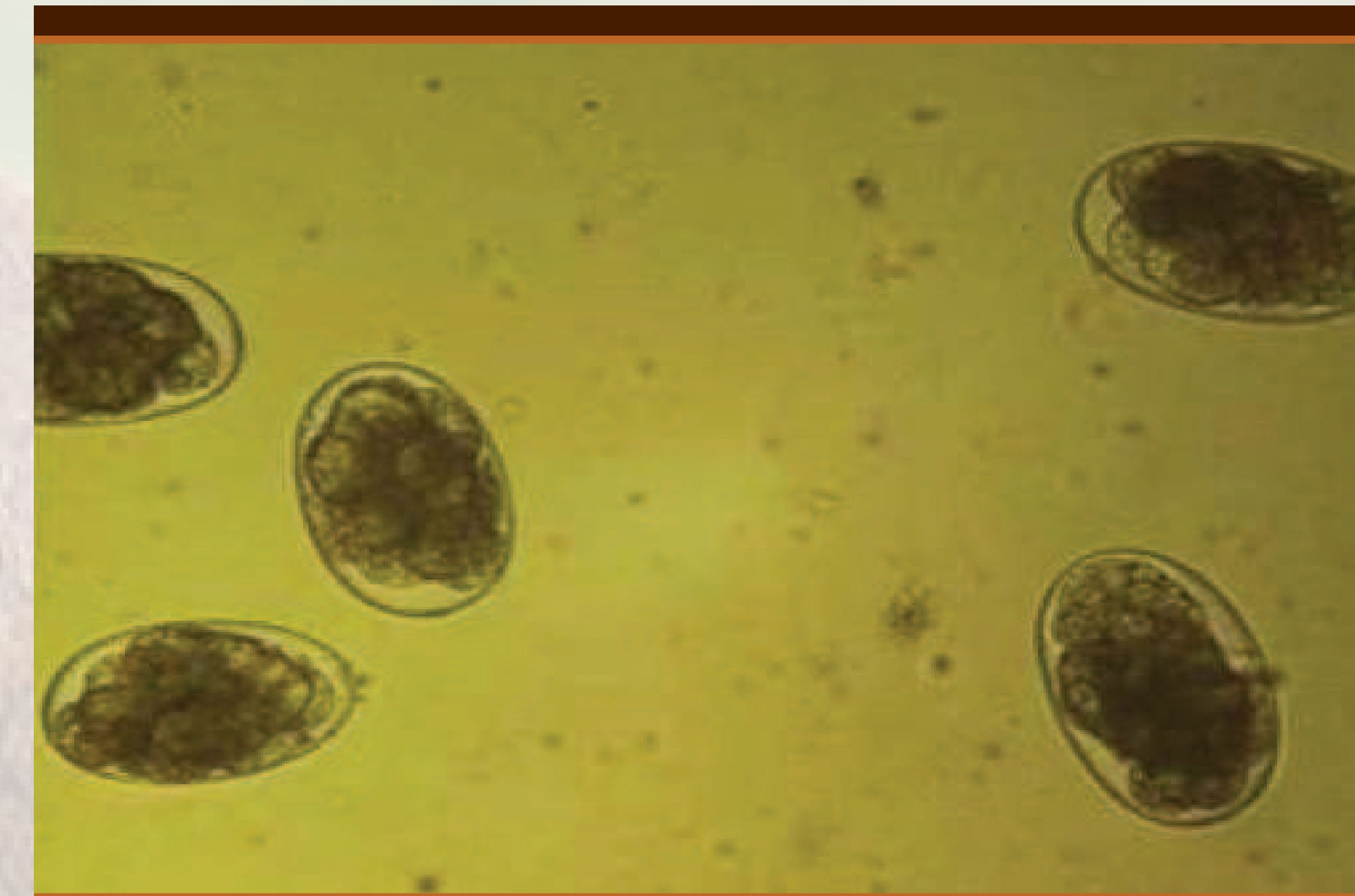
– The survey used both qualitative (questionnaire, BCS and FAMACHA® score charts) and quantitative laboratory (C-ELISA and McMaster) techniques.

– A total of 213 small ruminants were sampled of these, 111 were goats and 102 sheep. The sero-survey also ensured representation from each age category, 74 Adult animals (> 3years), 69 juvenile animals (between 1 and 2 years) and 70 young animals (between 6 and 12 months) were sampled.

– Data was analysed using IBM Statistical Package for Social Sciences (SPSS) version 22. The map was generated using ArcGIS for desktop version 10.1 (ESRI Corp., USA).

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Helminth Strongyle eggs under the X40 objective lens of a light microscope

KEY CONCLUSIONS

■ PPR incidences were found to be sporadic in occurrence. The ongoing mass vaccination programmes should include vaccination for CCPP and SGP for goats and enterotoxaemia and SGP for sheep.

■ The 37% PPR sero-prevalence was lower than the recommended 70%. Sampled animals were therefore susceptible to future outbreaks. PPR vaccination efforts should target young and juvenile animals as they had the lowest sero-prevalence. There is an urgent need to carry out a livestock census, this will aid in better planning and coverage during vaccination activities.

■ Post vaccination sero-surveys can be used as a tool to monitor the access and effectiveness of PPR vaccination activities.

■ Gastro-intestinal parasitism is still an important production challenge for small ruminant owners and may result in over reporting of PPR cases. In this survey, livestock owners from Meto area reported the highest incidences of PPR due to persistent diarrhoea cases.

■ Concurrent administration of coccidia medication in persistent diarrhoea cases should be part of the treatment protocol.

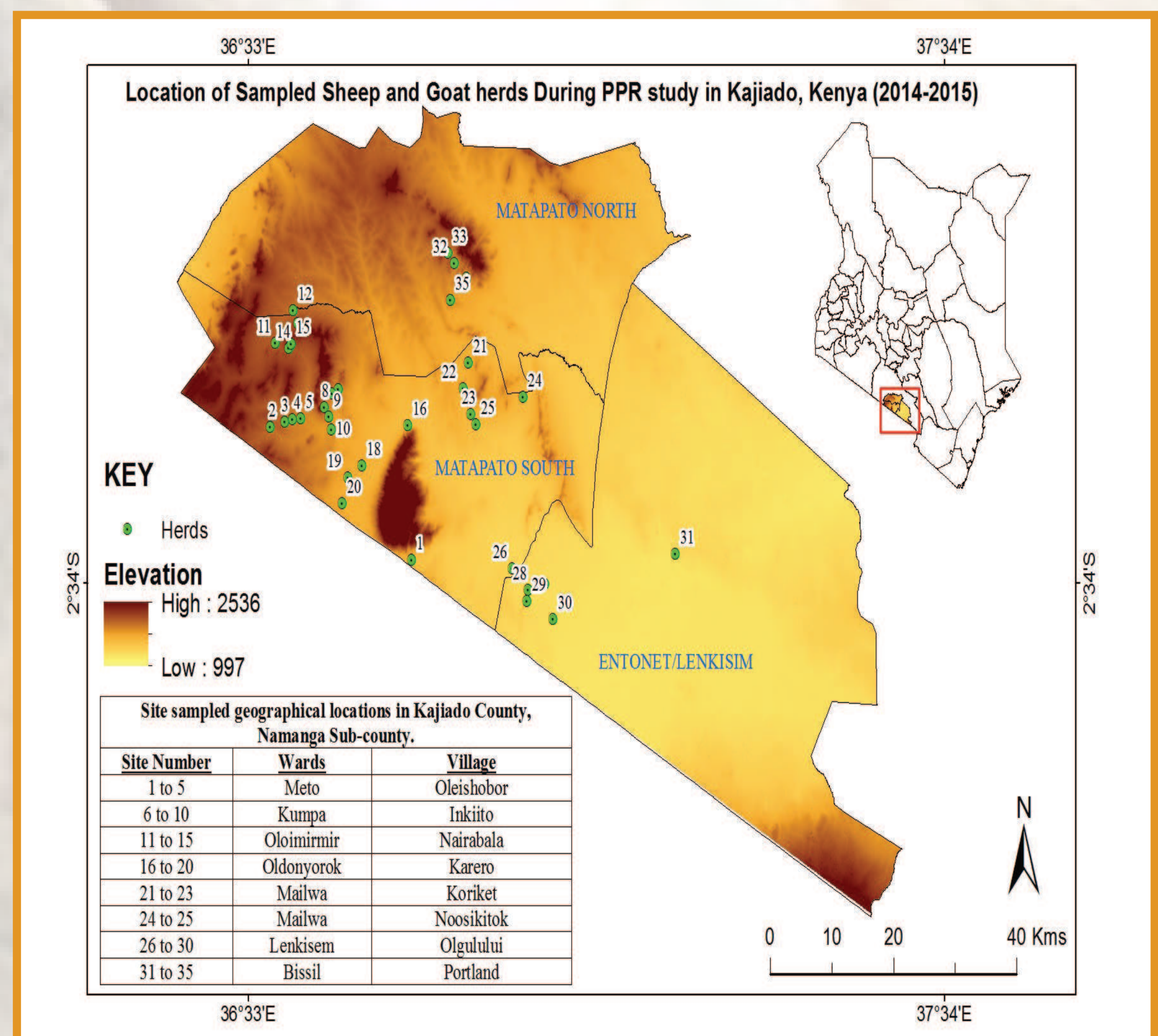
■ Use of FAMACHA® score cards should be adopted to target animals that require anthelmintic treatment. Future research should determine anthelmintic resistance levels in pastoral small ruminant production systems in Kenya.

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