

# Epidemiological investigation of Peste des petits ruminants virus in small ruminants in Eastern Amhara, Ethiopia

Biruk Alemu<sup>1</sup>, Getachew Gari<sup>2</sup>, Barbara Wieland<sup>1</sup>, Bewket Siraw<sup>3</sup>, Wondweson Asfaw<sup>4</sup>, Samuel Mulat<sup>4</sup>, Daniel Tekesete<sup>2</sup>, Demeke Sibhat<sup>2</sup> and Reta Duguma<sup>5</sup>

<sup>1</sup>International Livestock Research Institute, Ethiopia; <sup>2</sup>National Animal Health Diagnostic and Investigation Center, Ethiopia; <sup>3</sup>Ministry of Agriculture, Veterinary Directorate, Ethiopia; <sup>4</sup>USAID, Livestock Market Development Project AGP-LMD, Ethiopia; <sup>5</sup>Addis Ababa University, Faculty of Veterinary Medicine, Ethiopia



## Background

PPR is an acute, highly contagious fatal viral disease of sheep and goats.

Over the last two decades, there has been an increased incidence of PPR outbreaks in Ethiopia.

Targeted vaccination of epidemiologically endemic populations and high-risk zones is the most essential and feasible approach for the control and elimination of PPR. However, very little research on PPR epidemiology in Ethiopia has been done.

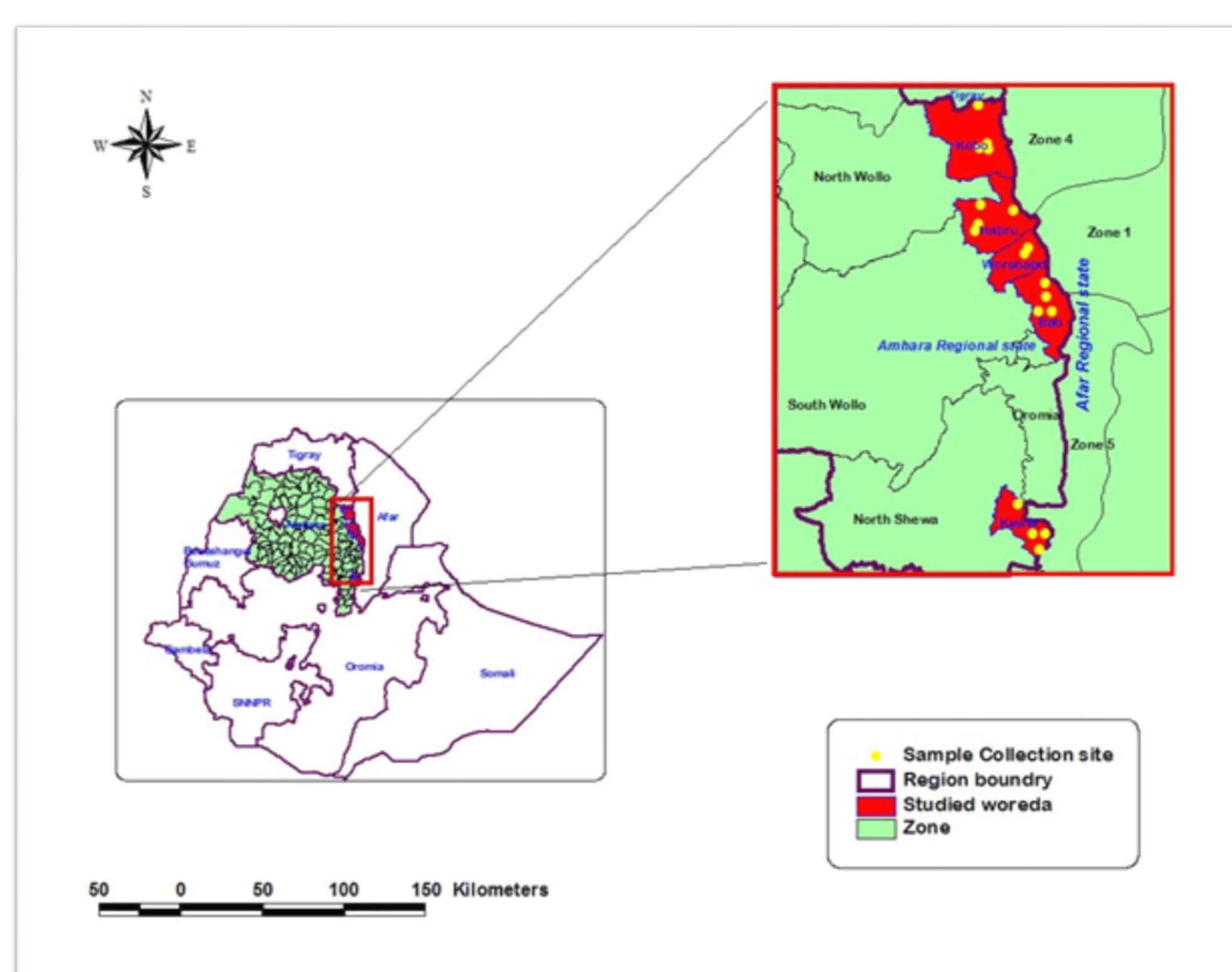
## Objectives

- Determine the prevalence, and risk factors for PPR in non-vaccinated animals
- Evaluate immunity level of vaccinated sheep and goats at herd level and
- Characterize the circulating PPR virus

## Materials and methods

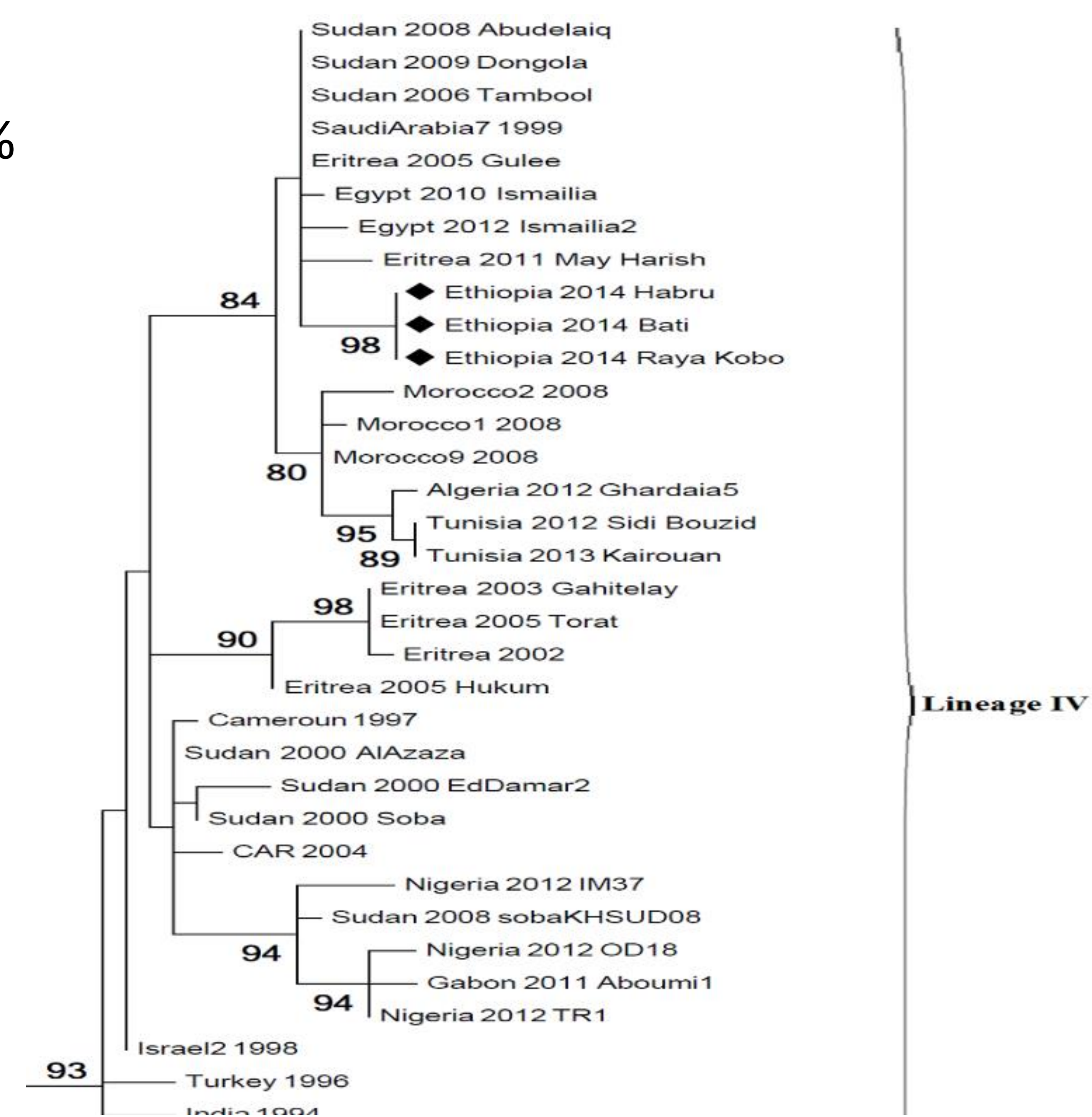
- Questionnaire survey
- Serological survey for antibody detection using competitive ELISA
  - a total of 808 serum samples, 612 from vaccinated and 196 from non-vaccinated
- Outbreak investigation
  - antigenic detection using Immuno-capture ELISA (18 swab and 14 heparinized whole blood samples)
  - molecular detection of the virus nucleic acid using RT-PCR (28 samples)

## Study area

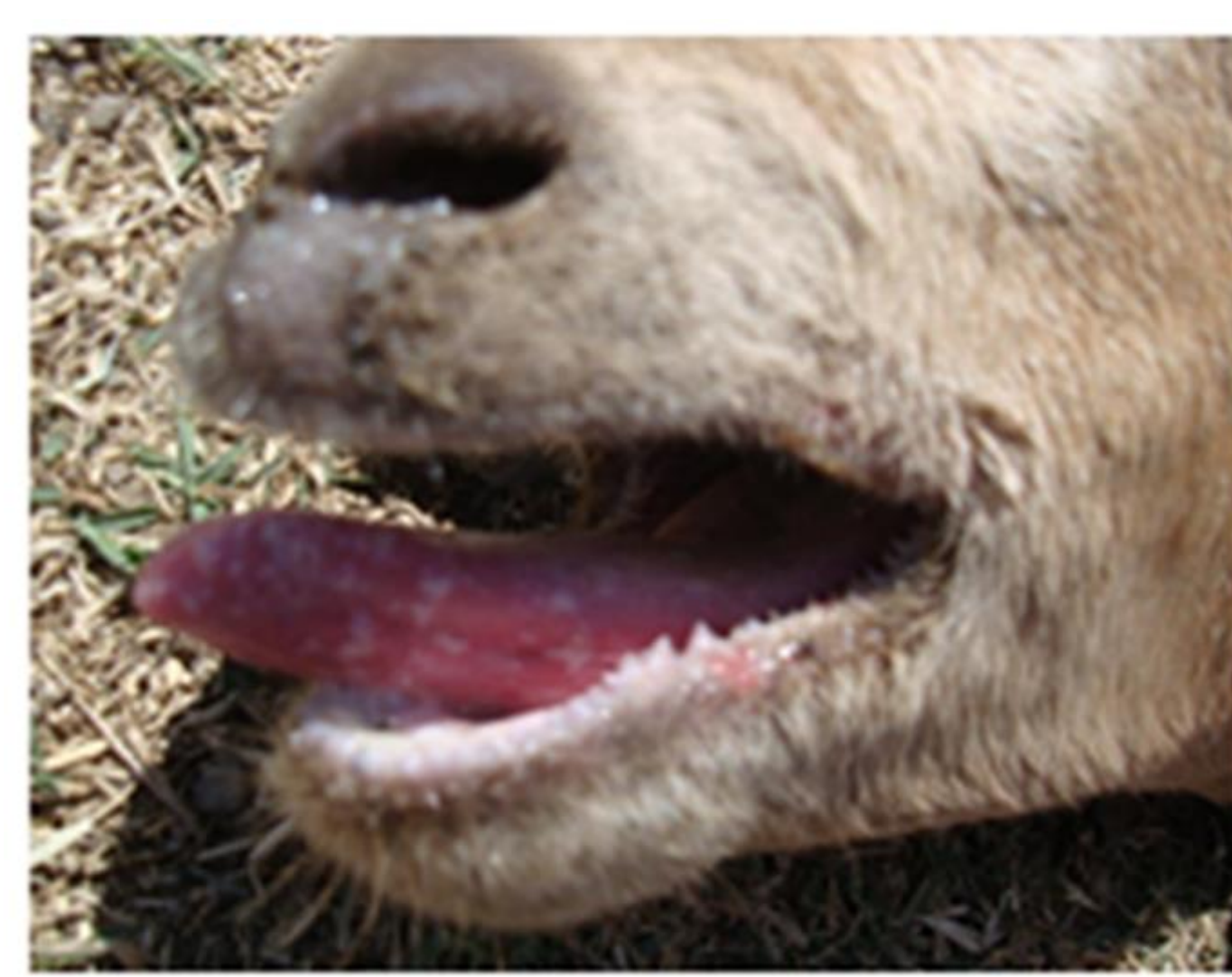


## Results

- The overall sero-prevalence was 28.1% in unvaccinated and 64.5% in vaccinated animals.
- Residing in Bati district, adult age, communal grazing and recent introduction of new animals were risk factors for PPR sero-positivity in unvaccinated sheep and goats.
- 31.3% and 46.4 % of clinical samples were positive with Ic-ELISA for PPR viral antigen and RT-PCR for viral nucleic acid, respectively.
- The isolated PPR virus clustered among lineage IV PPR isolates.



Erosive and necrotic stomatitis



Nasal discharge, dead cells on the surface of tongue and lesion on lower lip

## Conclusions and recommendations

The clinical, serological and molecular findings confirm the high level of circulation of PPR virus. Therefore, the findings should inform targeting of vaccination programs.

Genetic characterization of the PPRV also provided evidence of the introduction and spread of Asia PPRV lineage IV in the country. The prevalence among vaccinated animals was lower than expected and observed herd immunity is likely not sufficient to prevent PPR circulation.

Vaccination monitoring systems thus seems warranted in order to ensure effectiveness of vaccination campaigns.

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Biruk Alemu

b.a.gemeda@cgiar.org • Box 5689 Addis Ababa Ethiopia • +251 116 17 22 23

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