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# Serological detection of *Mycoplasma bovis* in beef calves in eastern Algeria

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## INTRODUCTION & OBJECTIVES

Bovine Respiratory Diseases (BRD) are predominant in beef calf farming. They are complex to diagnose and treat since they involve several etiological agents, bacteria as well as viruses. *Mycoplasma (M.) bovis* is a pathogenic bacteria, involved in young cattle BRD. It infects both the upper and lower respiratory tracts and induces a marked immunological response, easily detectable by ELISA kits. The aim of this study was to detect the circulation of *M. bovis* in Eastern Algeria (Fig. 1), where BRD are frequent although the presence of *M. bovis* has never been reported so far.

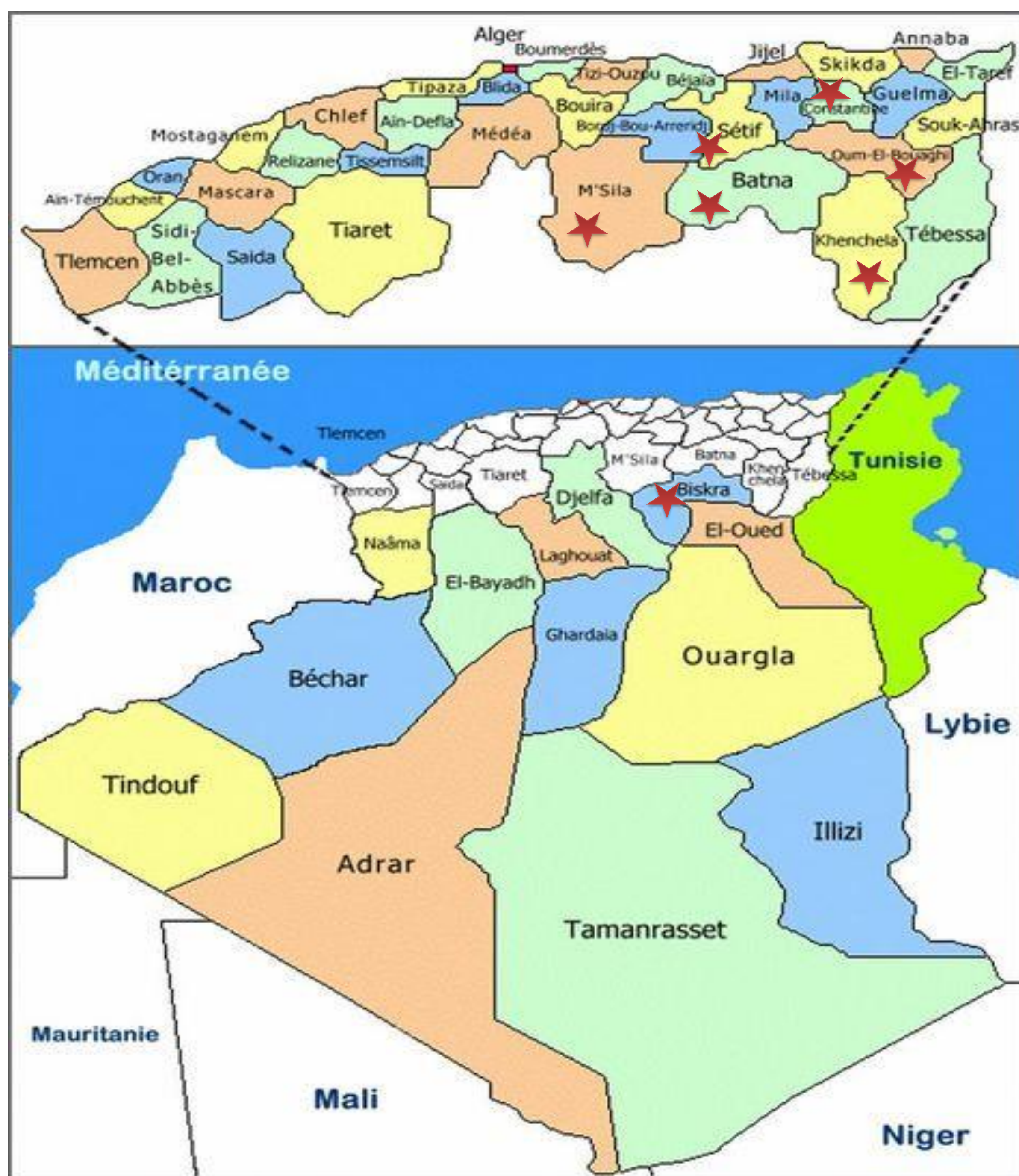


Fig.1. Regions of Algeria (wilayas) where samples were collected (red stars)

## MATERIALS & METHODS

Circulation of *M. bovis* in calves was monitored through indirect diagnosis, in farms where BRD occurred in different regions (wilayas, Fig. 1). Blood samples were taken both from animals showing respiratory signs (n=3) and from apparently healthy ones (n=3) in each visited farm (n=60). Two calves breeding models coexist in Algeria: mixed farms where dairy cows and calves are bred together, or fattening units where calves from various farms are comingled and reared together. Two types of farms were investigated: classical and pilot farms. Pilot farms receive financial support from the government and are more modern operations, employing trained staff, including a permanent veterinarian dedicated to herd health management (Fig. 4-5).

Blood serum samples were analyzed using a commercial ELISA kit (ID Screen® ELISA) as described before (1) at the Anses Laboratory of Lyon, France.

## RESULTS & DISCUSSION

In our calves population, the global individual seroprevalence was 69%. A high proportion of herds (53/60, i.e. herd prevalence of 88%) harbored at least one seropositive calf. Some differences were observed between wilayas but not interpreted due to small numbers. We found a slightly higher proportion of healthy-but-seropositive calves (55,2%) than diseased-and-seropositive calves (44,8%) (Fig. 2). The kit used here is known to be highly sensitive and thus to detect any contact with *M. bovis* or circulation in a herd (seroconversion after exposure) rather than indicating true clinical infection of the animal (2). This means that the serological results of the calves studied here may not be correlated with clinical status but with time of sampling after onset of on-farm infection or co-mingling. Given the relatively long time needed for antibodies to appear (9 to 21 days after infection (3), diseased animals might not yet have all been seropositive at the time of sampling.

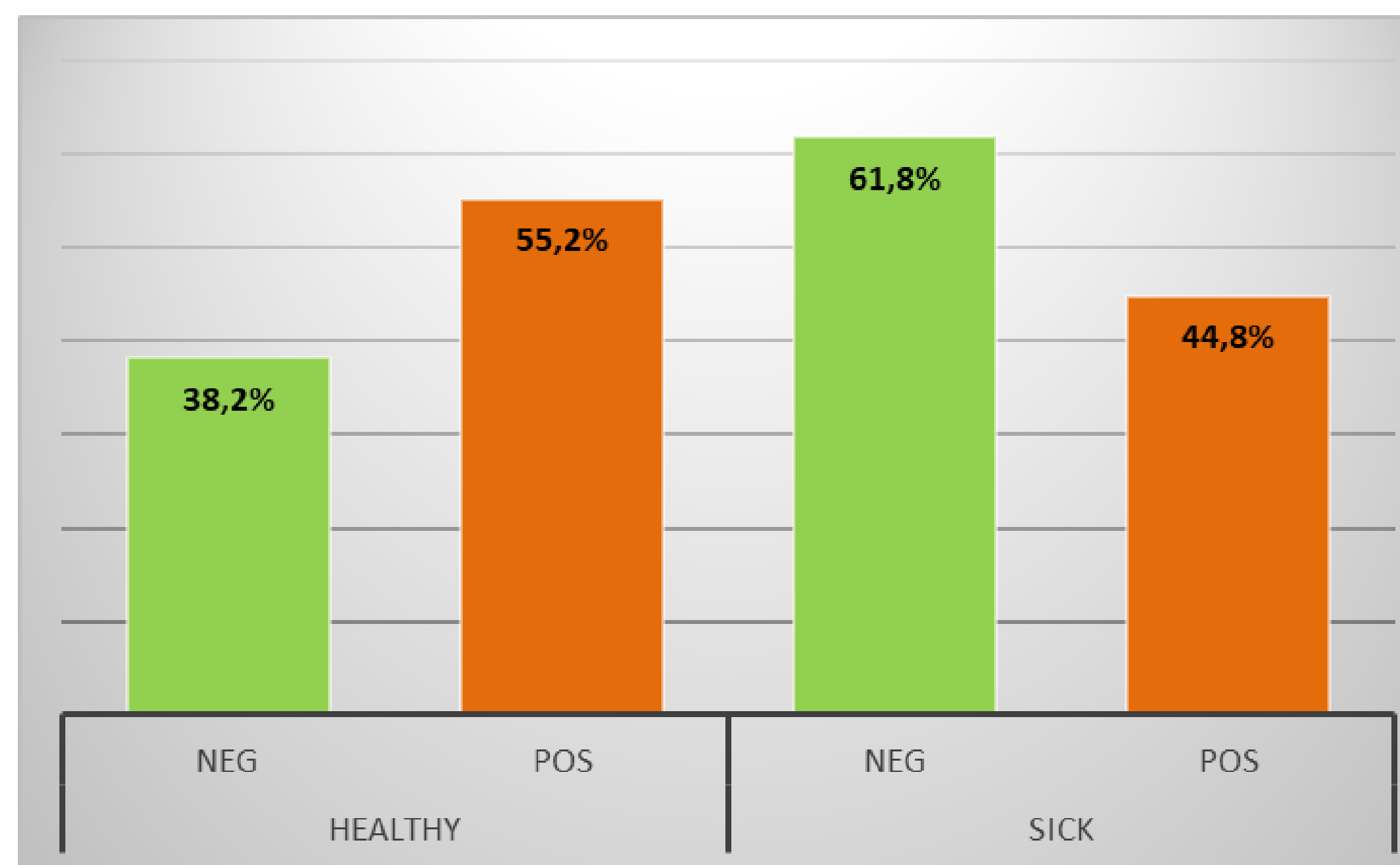


Fig.2 Global serological results

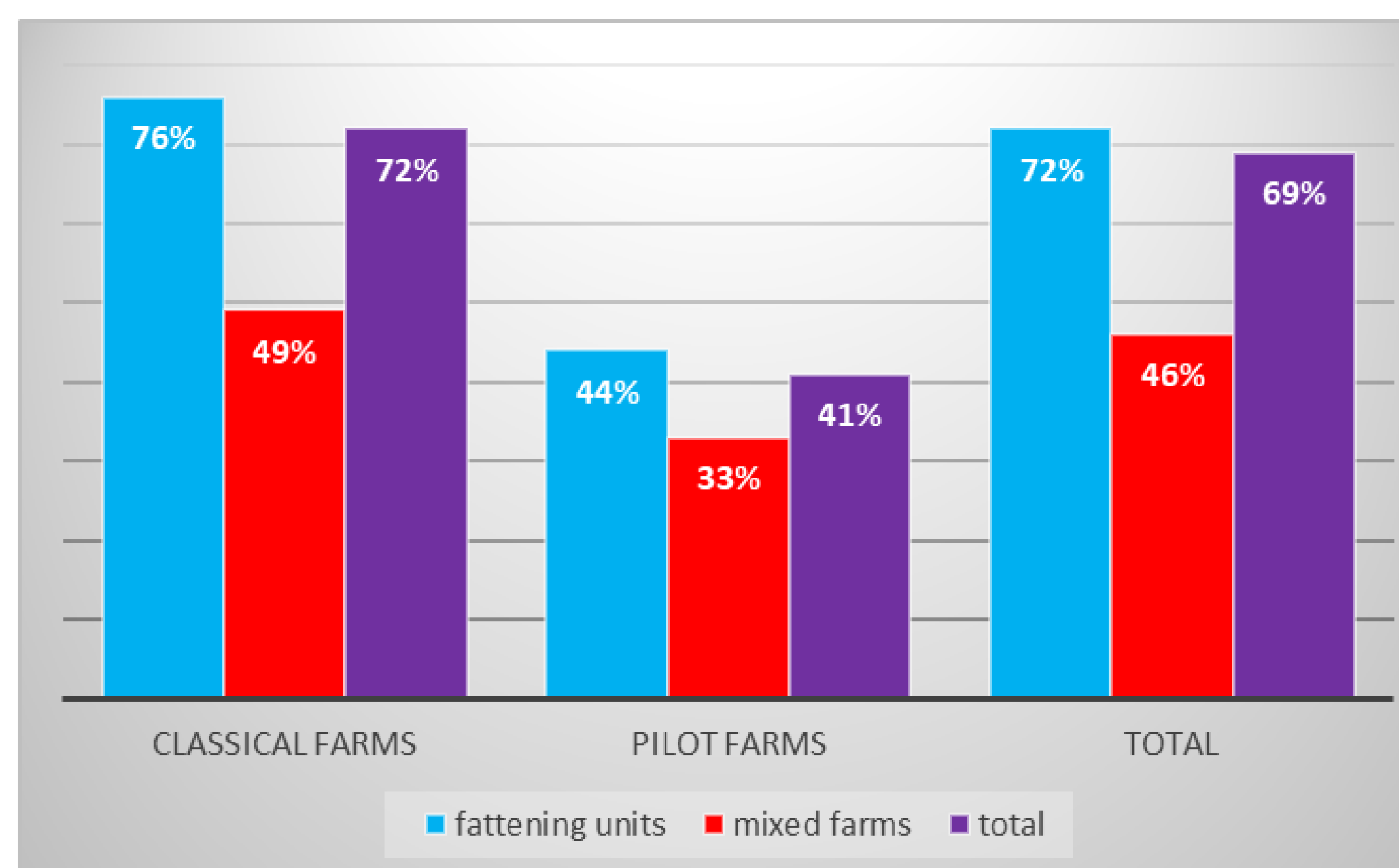


Fig.3. Proportion of seropositive animals in each type of farm

These results should be interpreted with caution, as healthy and diseased animals came from the same farms and were thus exposed to the same conditions.

A greater proportion of animals aged  $\geq 1$  year were seropositive: 85,4% (35/41) versus 66,5% (206/301) for younger calves. This is logical as older calves were more likely to have been in contact with *M. bovis*.

Here, seroprevalence of *M. bovis* was higher in fattening units than in mixed farms (72% versus 46%) (Fig. 3). This illustrates nicely the fact that comingling of animals from various origins is a significant risk factor for introduction of *M. bovis* (4). There was also a lower seroprevalence in pilot farms (41%, n=19/45) than in the traditional farms (72%, n=222/306) (Fig. 3). Traditional farming might be associated with some zootechnical practices resulting in a higher contamination of calves. On the contrary, the better management of animals (housing, hygiene, atmosphere, etc.) in the pilot farms might provide healthier conditions.



Fig. 4 Examples of sampled pilot farms

## CONCLUSION

Our study proved for the first time a frequent circulation of *M. bovis* in Algeria by detection of antibodies in calves with high herd and animal prevalences. As elsewhere in the world, *M. bovis* may be an important pathogen implicated in BRD in this country. Better allocation of resources (finances and skilled personnel) to bovine health management could help reduce the spread of *M. bovis* in livestock, as shown by our results in pilots farms. For a better knowledge of the Algerian situation, further studies have been done to isolate and characterize the circulating strains of *M. bovis* (subtypes and antibioresistance profiles) (5).

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