

# CASE STUDY: UDDER HEALTH IN HEIFERS AFTER VACCINATION AGAINST MASTITIS



Nuria Roger, Luís Miguel Jiménez

Servet Talavera SL Talavera de La Reina, Toledo, Spain

## INTRODUCTION

Heifers represent the future of the dairy farm; intramammary infections (IMI) are responsible for great economic losses. As described in the bibliography, heifers can be infected before calving; infection causing microorganisms can be *Staphylococcus aureus*, coagulase negative staphylococci (CNS), *Streptococcus agalactiae*, *Streptococcus uberis*, *Mycoplasma spp.*, etc. Heifers can also be infected after calving, an example can be *Escherichia coli* mastitis. Different tools are needed to prevent IMI before and after calving in order to improve heifers' udder health and dairy farm economic profit. Vaccination is one tool that can help controlling heifers' mastitis and improve milk quality.

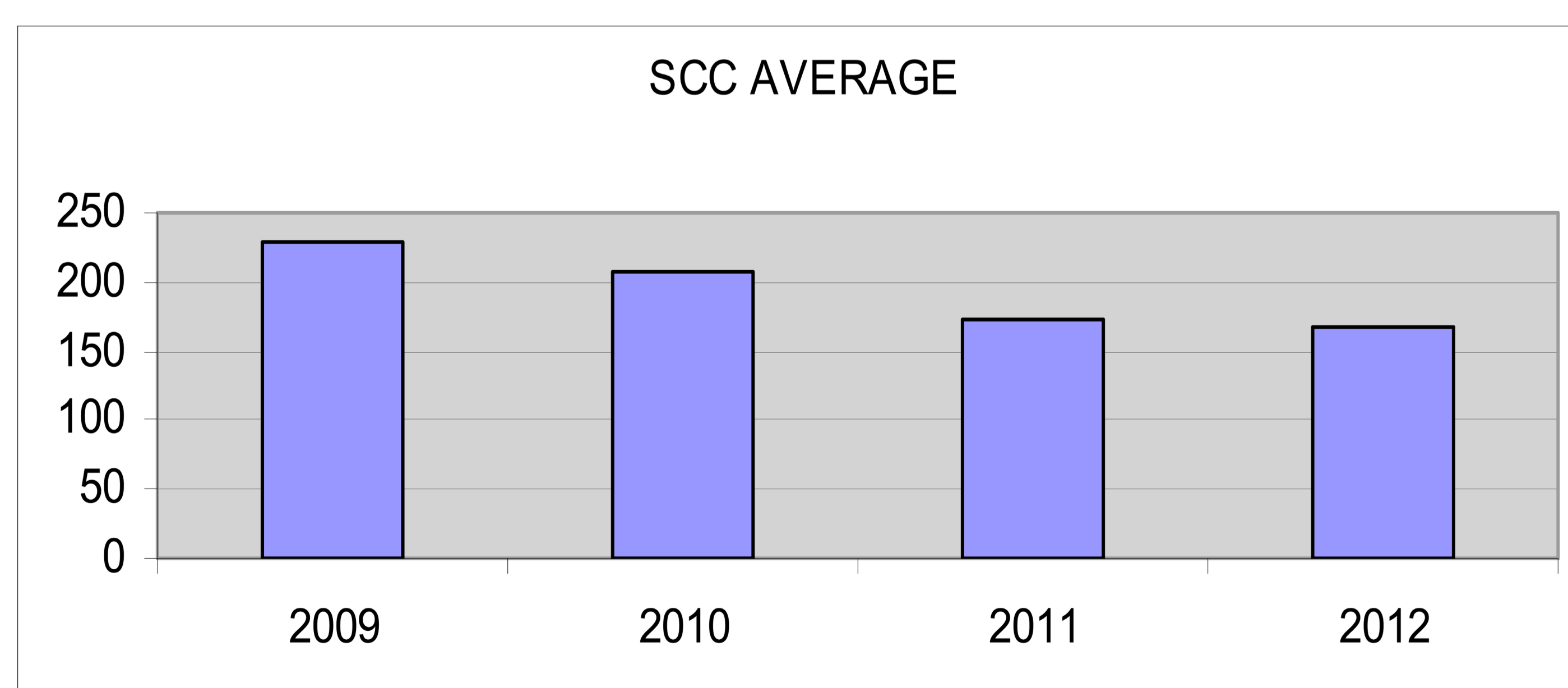
## MATERIALS AND METHODS

This case study was conducted in dairy farm in Spain, 650 milking cows (Holstein), an average of 243 heifers per year, heifers before calving are in bedding pack of straw with dry cows and overstocking is observed. The objective of this study was to compare the situation of heifer's mastitis two years before use vaccination against mastitis in heifers with two following years after use of vaccination. In this study 972 heifers were enrolled during four years. During 2009 and 2010 vaccination against mastitis was not used. During 2011 and 2012 all heifers were vaccinated 45 days before expected calving date (first dose), 10 days before expected calving date (second dose) and third dose 52 days after calving. The vaccine used was against *Staphylococcus aureus*, CNS and *E. coli* (STARTVAC®), with inactivated J5 and inactivated strain of *Staphylococcus aureus* SP140 (Slime Associated Antigenic Complex, SAAC). All animals (primiparous) were included after calving in Dairy Herd Improvement program; one sample was collected every month to determine individual somatic cell count (SCC). All parameters of udder health were analyzed every month with Milk Quality Management Software of Servet Talavera. Key performance index (KPI) was analysed: average of SCC, prevalence of infection, new infection rate (NIR), new infection rate at calving (NIR fresh) and monthly clinical mastitis rate (MCMR). Milk production yield was compared during the four years. No changes extra were made in heifers management except vaccination.

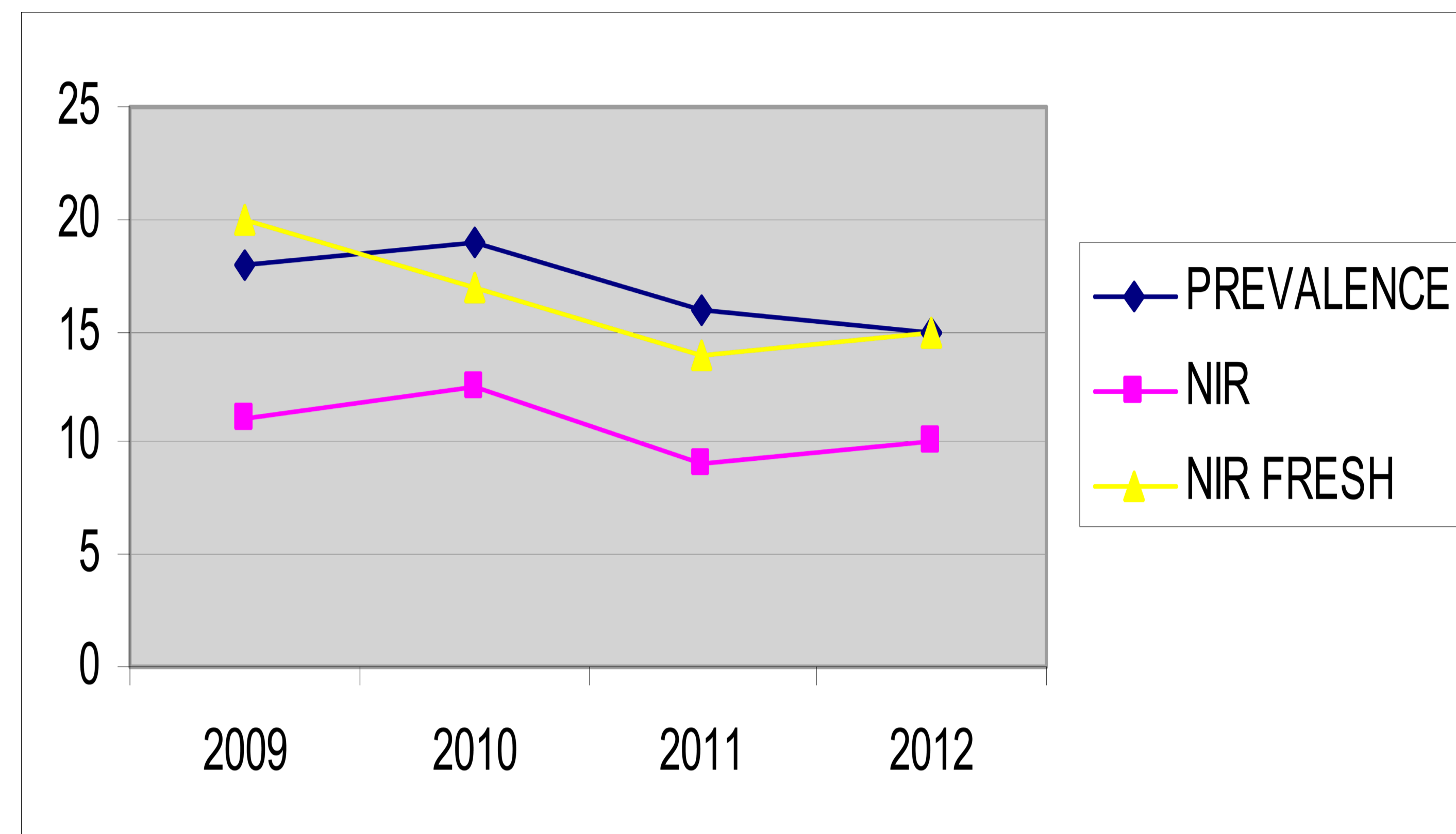
## RESULTS

Average of SCC during 2009 and 2010 was 230,000 and 207,000 cells/ml. During in 2011 and 2012 average of SCC was 173,000 and 168,000 cells/ml respectively (Figure 1). The average monthly prevalence of IMI was 18% and 19% during 2009 and 2010 and 16% and 15% during 2011 and 2012 respectively. Average of monthly NIR in 2009 and 2010 was 11% and 12.5% and during 2011 and 2012 was 9% and 10% respectively. Average of NIR in fresh heifers was 20% and 17% during 2010 and 2011 and 14% and 15% during 2011 and 2012 respectively (Figure 2). Average of MCMR was 2.5% and 3%, and 2% and 0.5% during 2011 and 2012 respectively (Figure 3). Average of milk production yield during 2009 and 2010 was 31.5 and 32 litres per day per heifer and 35 and 34 litres per day per heifer during 2011 and 2012. (Figure 4).

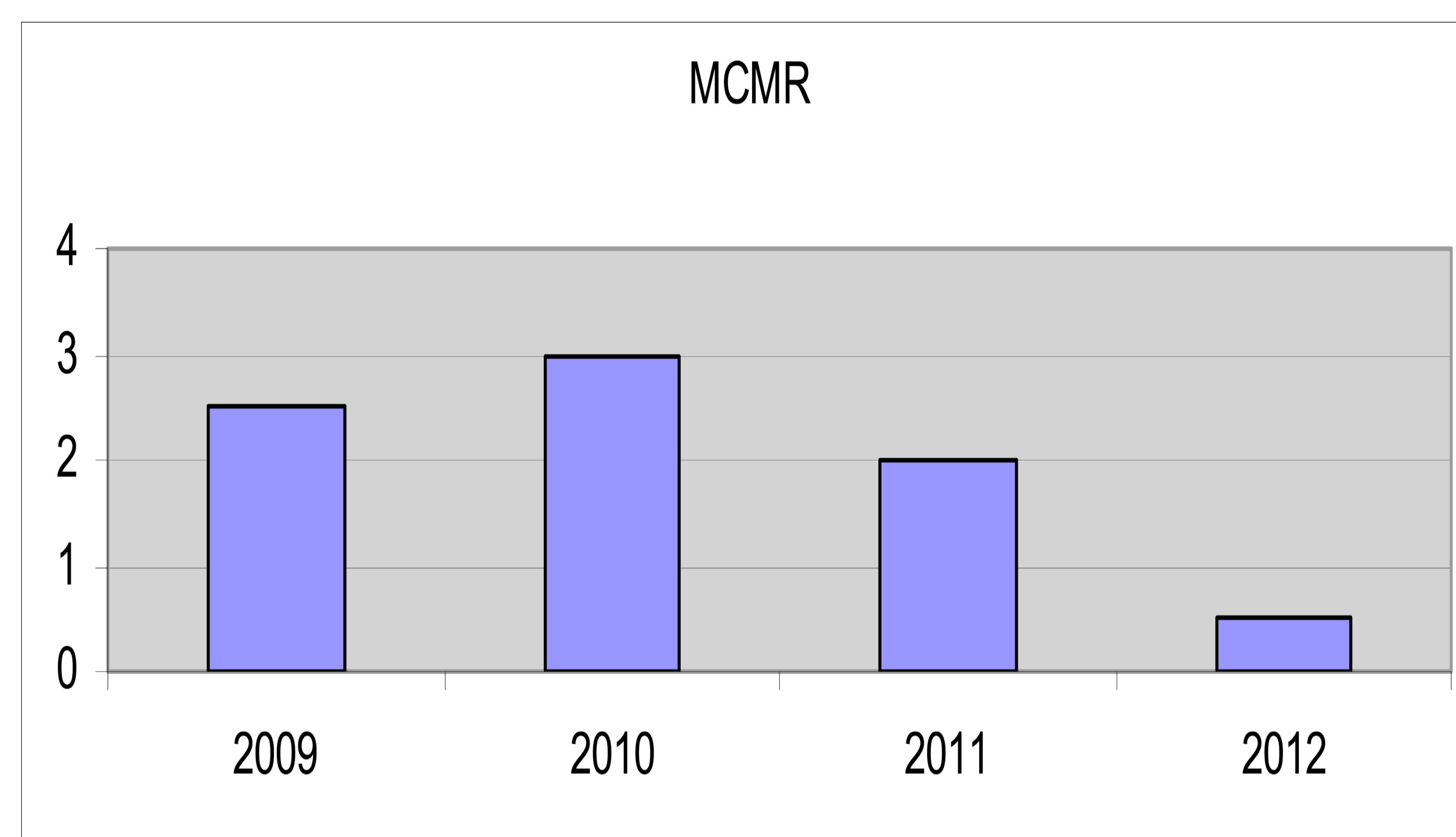
**Figure 1.** Average SCC (x 1,000 cells/mL). 2009-2010 period before vaccination and 2011-2012 period after vaccination.



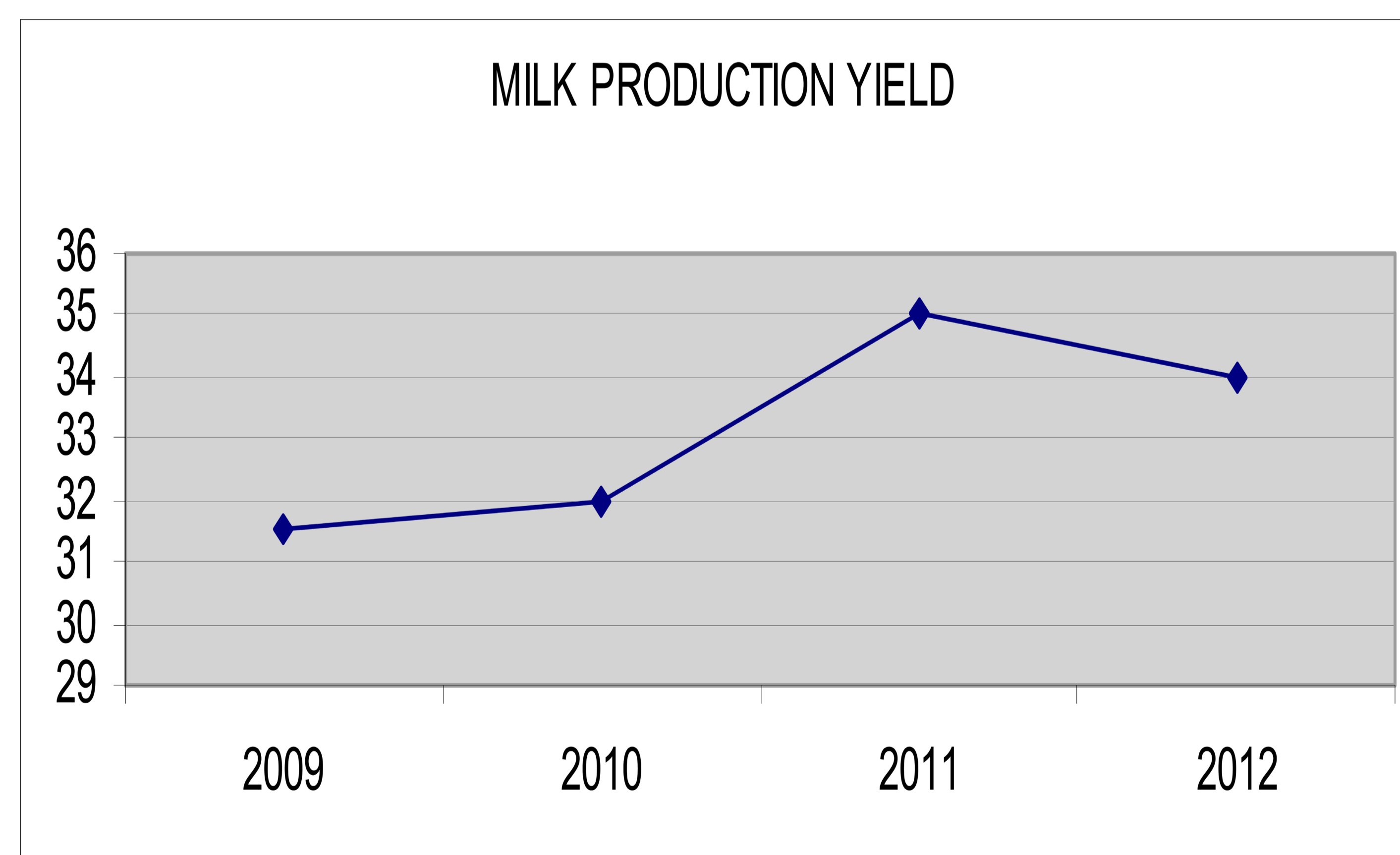
**Figure 2.** Average prevalence of infection, NIR and NIR fresh (%). 2009-2010 period before vaccination and 2011-2012 period after vaccination.



**Figure 3.** Average MCMR (%). 2009-2010 period before vaccination and 2011-2012 period after vaccination.



**Figure 4.** Average milk production yield (L). 2009-2010 period before vaccination and 2011-2012 period after vaccination.



## DISCUSSION

Average SCC was higher during 2009 and 2010, prior to the use of the vaccine. Average of prevalence of IMI was higher during 2009 and 2010 than the two following years. New infection rate and new infection rate in fresh heifers were higher during years prior to the use of vaccine. Reduction of clinical mastitis cases was observed during the years when vaccine was used in 2011 and 2012. More production of milk was observed during two following years after use of vaccine.