



# From Milk to Mozzarella: Genetic Improvements in Italian Mediterranean Buffalo

Mayra Gómez Carpio, Italian National Association of Buffalo Breeders, Caserta, Italy; Roberta Cimmino, Italian National Association of Buffalo Breeders, Caserta, Italy; Dario Rossi, Italian National Association of Buffalo Breeders, Caserta, Italy; Gianluigi Zullo, Italian National Association of Buffalo Breeders, Caserta, Italy; Gianluca Neglia, University of Napoli Federico II - Department of Veterinary Medicine and Animal Production, Italy; Roberta Matera, University of Napoli Federico II - Department of Veterinary Medicine and Animal Production, Italy; Roberto Mauriello, Italian National Association of Buffalo Breeders, Caserta, Italy; Yuri Gombia, Italian National Association of Buffalo Breeders, Caserta, Italy; Gabriele Di Vuolo, Italian National Association of Buffalo Breeders, Caserta, Italy; Stefano Biffani, Animal Breeding, Bioinformatics & Biostatistics CNR - IBBA, Milano, Italy.

## INTRODUCTION

The Italian Mediterranean buffalo, renowned worldwide for producing high-quality mozzarella cheese, has been the focus of significant genetic improvement efforts. The Italian Mediterranean Buffalo is the most important breed of buffalo for the production of milk and its derivatives, which has a selection program implemented more than 20 years ago. The selection is based on an aggregate index that includes dairy, mozzarella yield and functional traits.

## OBJECTIVE

This study reviews the genetics progress of cheese yield traits, through the implementation of the IBMI aggregate index.

## MATERIALS & METHODS

- Breeding values from the latest genetic evaluation of live bulls and buffaloes with known genealogies (~ 27000 females and ~ 7200 males), born between 2000 and 2023.
- The regression coefficients between breeding values and year of birth were calculated using the lm procedure in the R programming environment.



## RESULTS & DISCUSSION

The results indicate positive genetic trends for the IBMI, with a yearly increase of +0.5697 and +0.6233 for females and males, respectively (Figure 1). These results are also due to the adoption of modern breeding methods such as genomic selection and artificial insemination. Such technological advances allow for more precise and efficient selection of individuals with desirable genetic characteristics, resulting in continuous improvements in the genetic performance of populations.

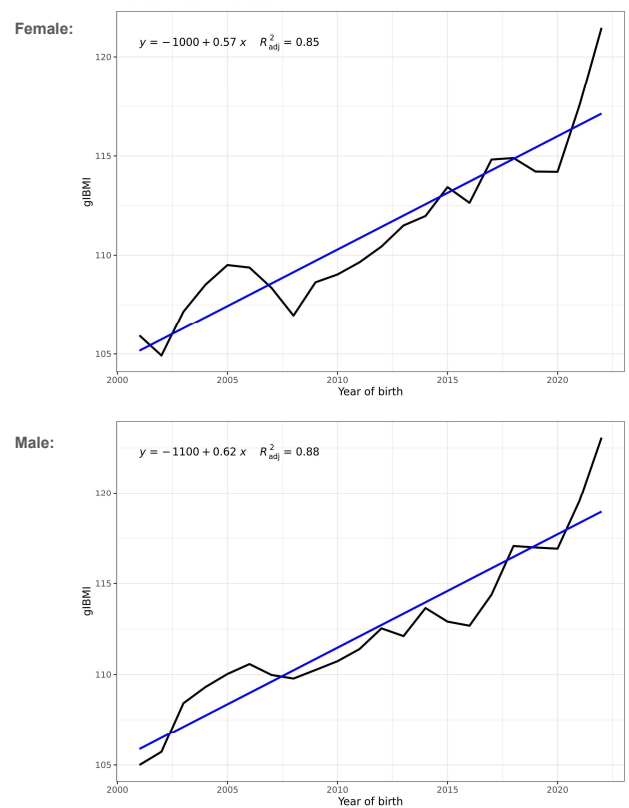


Figure 1. Genetic trend of genomic IBMI in the IMB

## CONCLUSION

Genetic advancements not only improve productivity but also ensure the sustainability of the breed. In the long term, this genetic evolution can play a key role in market expansion and in the international competitiveness of buffalo-derived products, positioning the Italian Mediterranean buffalo as a leader in high-quality mozzarella production.

## IN COLLABORATION



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