Strategies for improving the profitability of buffalo breeding

Riferimenti
Tipo di progetto
Gruppo Operativo

Acronimo
STRABUF

Tematica
Gestione aziendale

Information
Time frame
2019 - 2023

Durata
51 months

Partners (no.)
8

Regione
Campania

Comparto
Zootecnia - bovini/bufalini

Localizzazione
ITF31 - Caserta
ITF33 - Napoli

Costo totale
€352.244,53

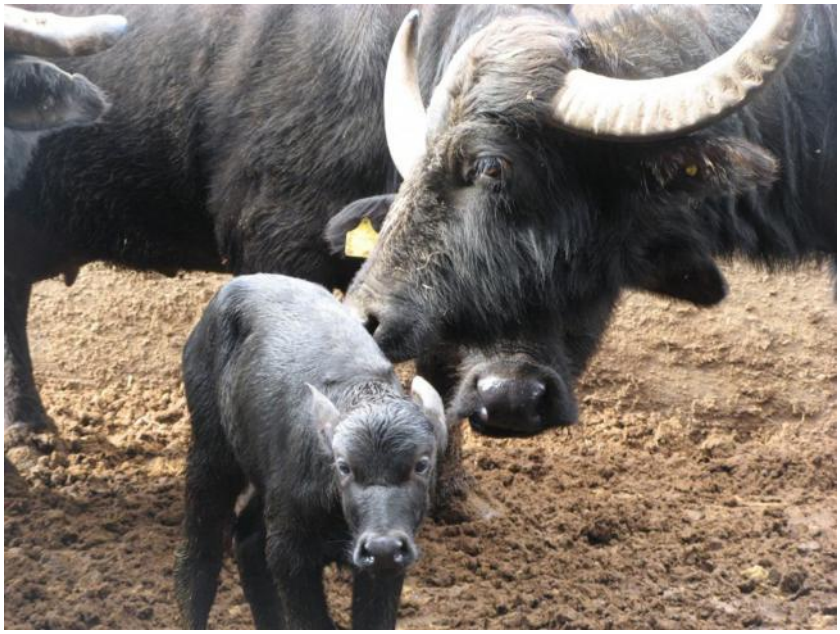
Fonte di finanziamento principale
Programma di sviluppo rurale

Programma di sviluppo rurale
2014IT06RDRP019: Italy - Rural Development Programme (Regional) - Campania

Parole chiave
Animal husbandry and welfare
Supply chain, marketing and consumption
Farming practice
Agricultural production system

Sito web
https://www.strabuf.it/

Project status
completed



Objectives
The main objective of the project is to implement some profitability indicators of buffalo breeding through specific studies aimed at improving the characteristics of the milk. In particular, the project aims to:

- develop predictive models by using managerial and economic information into the statistical models, for the identification of indicators of profitability, linked to production, animal welfare, reproductive and sustainability aspects;

- reduce the number of animals, keeping cheese production constant, through careful genetic improvement programs;

- Improvement of breeding and, in particular, milking techniques ;

- Identification of new nutraceutical metabolites in milk and mozzarella cheese;

- Improvement of the supply chain traceability system.

Results
The main results achieved during STRABUF project are reported. All these are fully transferable to other farms and eterprenurial groups operating in the sector.

- A questionnaire survey was carried out which highlighted the weakness and strengths of buffalo farming in Campania. Firstly, a phenotypic characterization of the Italian Mediterranean buffalo was carried out (Costa et al., https://doi.org/10.3390/ani10020327). Furthermore, it highlights an important critical point of buffalo farms: the lack of standardization of

milking techniques. Through adequate processing of the data, it was possible to define for the first time the most suitable milking parameters for the buffalo (Matera et al., https://doi.org/10.1080/1828051X.2023.2271951). The analysis of the data obtained through functional milk controls has made it possible to highlight the importance of the somatic milk cell parameter in defining an inflammatory state of the udder and intervening before the phenomenon requires the use of antibiotics (Costa et al., https://doi.org/10.3168/jds.2019-18009).

- Process innovation obtained through the application of innovative breeding techniques such as zero grazing, which involves the use of green fodder for feeding the animals directly in the stable. Through this technique it was possible to improve the qualitative and functional aspects of the milk and overall the sustainability of the buffalo farm (Neglia et al., https://doi.org/10.1038/s41598-022-25491-w). In fact, zero grazing has allowed a greater removal of nitrogen from the soil (environmental sustainability), reduced the cost of the ration by around €0.90 (economic sustainability) and the employment of a worker in the company (social sustainability). But above all, with this technique the functional characteristics of the milk were improved, as the antioxidant power of the milk and the content of short-chain carnitines and betaines were increased. Several studies have demonstrated the importance of taking these molecules in preserving human health and reducing the risk of metabolic syndrome (D'Onofrio et al., https://doi.org/10.1038/s41598-020-65865-6).

- The spectra used in mid-infrared to evaluate the quality of buffalo milk were analysed, creating more accurate and truthful predictive models of the composition of the milk.

Activities
A preliminary investigation will be carried out based on the Test-Day records carried out in the farms associated with ARAC in the last 5 years (WP1). The analysis of the data will allow to evaluate the characteristics of the milk in relation to some reproductive indicators. Furthermore, through targeted actions in about 50 farms, a questionnaire survey will be carried out to record the managerial techniques adopted, with particular reference to milking. In the 2 farms partner of the project 2 groups of buffaloes will be created, fed with isoproteic and isoenergetic diets but different for the fodder base (using green fodder towards dry fodder). Productions will be recorded monthly and individual milk samples (30 / group) will be collected to be subjected to lactodynamographic analysis and MIRS spectroscopy. Blood samples for the evaluation of the metabolic profile will be also collected (WP2). In addition, bulk milk samples will be collected every two months and cheesemaking tests will be carried out to evaluate the functional profile of milk and mozzarella during lactation (WP3). The information obtained in WP1 and WP2 will be analyzed for the identification of indicators and benchmarks for the improvement of the profitability and sustainability of the supply chain and prediction models for the technological characteristics of milk (WP4), as well as for the improvement of milking techniques. Finally, accompanying and dissemination measures are foreseen for the entire duration of the project, in order to make the results accessible to all buffalo farms (WP5).

Context
Buffalo breeding represents one of the main agricultural activities in the Campania Region: the income of the supply chain would be around 20% of the Campanian GDP (considering breeding and processing), offering work to over 15,000 workers. Moreover, as highlighted in the context analysis of the Campania Region, it is one of the few livestock sectors in constant growth. Furthermore, it should be considered that the employees of the supply chain are about 40% of the age of less than 40 years, demonstrating the key role played by the buffalo supply chain in reducing the phenomenon of youth unemployment. Based on data from the National Animal Recording (BDN, Teramo), at March 31, 2018 there are 1,273 buffalo farms in Campania (57.0% of the total present on the national territory) and 295,645 heads (74% of the Italian heritage). The remarkable development of the supply chain must be sought in the enhancement of the final product that derives from this breeding: the Campana DOP buffalo mozzarella, the fourth Italian DOP cheese for export and which, based on the data provided by the Protection Consortium, ensured a turnover in 2016 to consumption of over 600 million euros.

Partenariato

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Partner				

Role	Azienda	Address	Telephone	E-mail
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Partner				

Pratice abstract

Description
Improvement of environmental sustainability, through innovative management techniques of buffaloes. In particular, the utilization of green fodder will allow to increase the biomass / ha and nitrogen removal

Description
Through the STRABUF project, highly innovative and fully integrated into the local area, it is expected to achieve objectives that will guarantee an improvement in the profitability of buffalo farms. The validation of productive, reproductive and economic indicators, as well as of the improvement of breeding techniques adopted in the farm, will be the basis of future choices of livestock entrepreneurs to face the ever-increasing fixed management costs.
Innovation and the farms influenced by it can be divided into two main categories: companies belonging to the recording

control of ARAC and other companies in the region. The former, 7% of the Campania buffalo farms, will be able to utilize the innovations deriving from all the project activities, coming from the production, fertility and management indicators (mastitis reduction, milking improvement) and related to the technological characteristics of the milk. In these companies, a milk sample is analyzed monthly by the ARAC laboratory: these subjects, therefore, will benefit from the results that will derive from the MIRS models (for the technological characteristics) implemented in the laboratory itself. However, all the buffalo farms will be able to use the information that will be conveyed through the dissemination initiatives during the project and, if interested, will be able to carry out qualitative analyzes for the technological characteristics at the ARAC laboratory to evaluate the potential for these characteristics of their buffaloes. Finally, the implementation of the new MIRS prediction models at the ARAC laboratory also represents an innovation for dairies which will be able to carry out routine new analyzes to understand and evaluate the dairy quality of the milk and possibly stimulate a milk quality payment system containing the parameters. milk technology.