25th Congress
ASPA2023
Animal Production Science: innovations and sustainability for future generations
Monopoli (Bari, Italy), June 13-16, 2023

2 BIODIVERSITY AND CONSERVATION OF GENETIC RESOURCES

Italian semen cryobank of autochthonous chicken breeds: the case study of *Siciliana* breed

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INTRODUCTION

The Siciliana is an ancient chicken breed of Southern Italy, originating from Sicily. It is distinctive for its typical double or rose comb. Due to the widespread use of high-performing commercial hybrids, the Italian poultry industry has experienced significant losses in terms of animal genetic resources over the past few decades. This erosion has affected many native genotypes, including the Siciliana.

The populations of this native breed are raised in very small numbers, and they suffer inbreeding and a loss of genetic diversity. It is extremely worrying that only 186 individuals were found during a recent census.

In fact, the Siciliana breed is listed as "threatened preserved," and recently, actions have been implemented to preserve this breed within the project 'Conservation of biodiversity in Italian poultry breeds: TuBAvI-2'. Overall, the present project aimed to promote and support the conservation of the Italian poultry genetic resources throughout the combined application of *in situ* and *ex situ* strategies.

OBJECTIVE

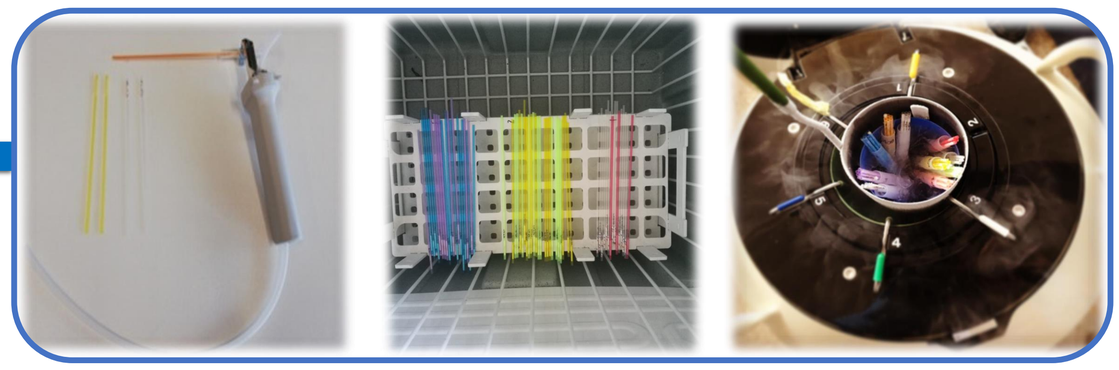
The aim of this work was to describe the activities developed and the outcomes achieved within the creation of the first Italian Semen Cryobank of Autochthonous Chicken and Turkey Breeds, about the Siciliana breed.

MATERIALS AND METHODS

Sixteen cockerels were raised in outdoor pens on a private breeding farm (Molise region), and after a training period ranging from 3 to 6 weeks, semen was successfully collected from eleven donors with the abdominal massage technique.

The quality of each fresh ejaculate was assessed shortly after collection, considering sperm volume, concentration (photometric approach), sperm membrane integrity (SMI, flow-cytometry), and motility parameters (CASA system).

Samples deemed suitable were processed and frozen; briefly, semen was diluted with freezing medium to reach a final sperm concentration of 1.0×10^9 sperm/mL and 2% of N-Methylacetamide and packaged into straws (0.25 mL) and frozen by exposure of straws 3 cm above liquid nitrogen bath for 10 min. An appropriate code system was adopted to guarantee the traceability of semen doses.



RESULTS

The cryopreservation process negatively impacts the post-thaw sperm quality, in fact we found a significant decrease in SMI, and in sperm motility parameters, the most severe damage was observed for progressive motility. Throughout the project timeframe 444 sperm doses, from 11 donors were stored in the cryobank.

	TM (%)	PM (%)	VCL (µm/sec)	VAP (µm/sec)	VSL (µm/sec)	LIN (%)	STR (%)	SMI (%)
Fresh	91.2 ± 0.6^a	26.3 ± 1.3^a	67.6 ± 1.7^a	45.0 ± 2.0^a	31.9 ± 1.0^a	43.8 ± 1.3^a	62.7 ± 1.0^a	92.0 ± 0.7^a
Frozen	26.3 ± 1.3^b	3.3 ± 0.2^b	39.6 ± 1.7^b	23.6 ± 1.3^b	15.1 ± 0.8^b	33.9 ± 1.6^b	53.7 ± 1.5^b	37.7 ± 1.5^b

CONCLUSION

The implementation of semen cryobank for this breed, as well as for other autochthonous chicken breeds provides an important connection with *in situ* strategies, to counteract genetic problems and prevent the extinction of breeds.

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Acknowledgments: This study was financed by MASAF PSRN 2014-2020, Project: "Conservation of biodiversity in Italian poultry breeds: insights and monitoring-TuBAvI-2"

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