UNIVERSITÀ DEGLI STUDI DI MILANO
DIPARTIMENTO DI MEDICINA VETERINARIA
E SCIENZE ANIMALI

Phenotypic characterization of two native Italian chicken (Gallus gallus domesticus) breeds for quantitative semen production and behavioural reactivity.

7th MEDITERRANEAN POULTRY SUMMIT
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Introduction

Biological uniqueness

Domestication

Genetic make-up

Adaptability

Production

Cultural value

Aquileia, IT, IV c. BC

Introduction

Conservation strategies:

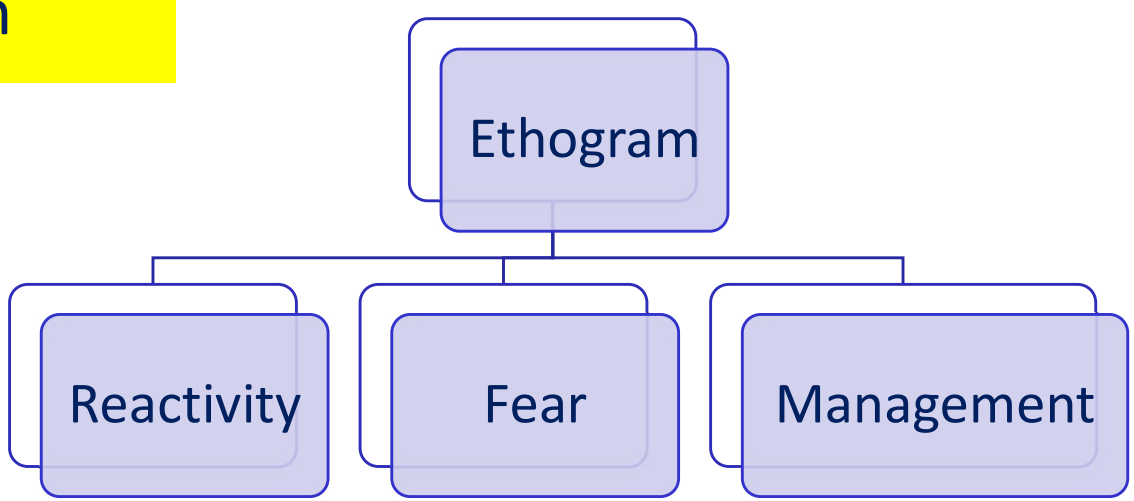
- Characterization
- *Ex situ* conservation (cryobanks)
- *In situ* conservation
- Niche market production

https://www.pollitaliani.it

Introduction

Phenotypic characterization

- Morphometric evaluation
- Productive evaluation
- Behavioural evaluation



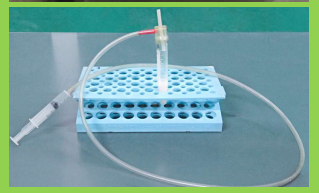
Aim

To characterize and compare bird reactivity and semen production in the native Italian chicken breeds:

Bionda Piemontese (BND)

Bianca di Saluzzo (SLZ).






Reactivity:

- Tonic Immobility (TI)
- Emergence Test (ET).

Materials & Methods

The roosters:

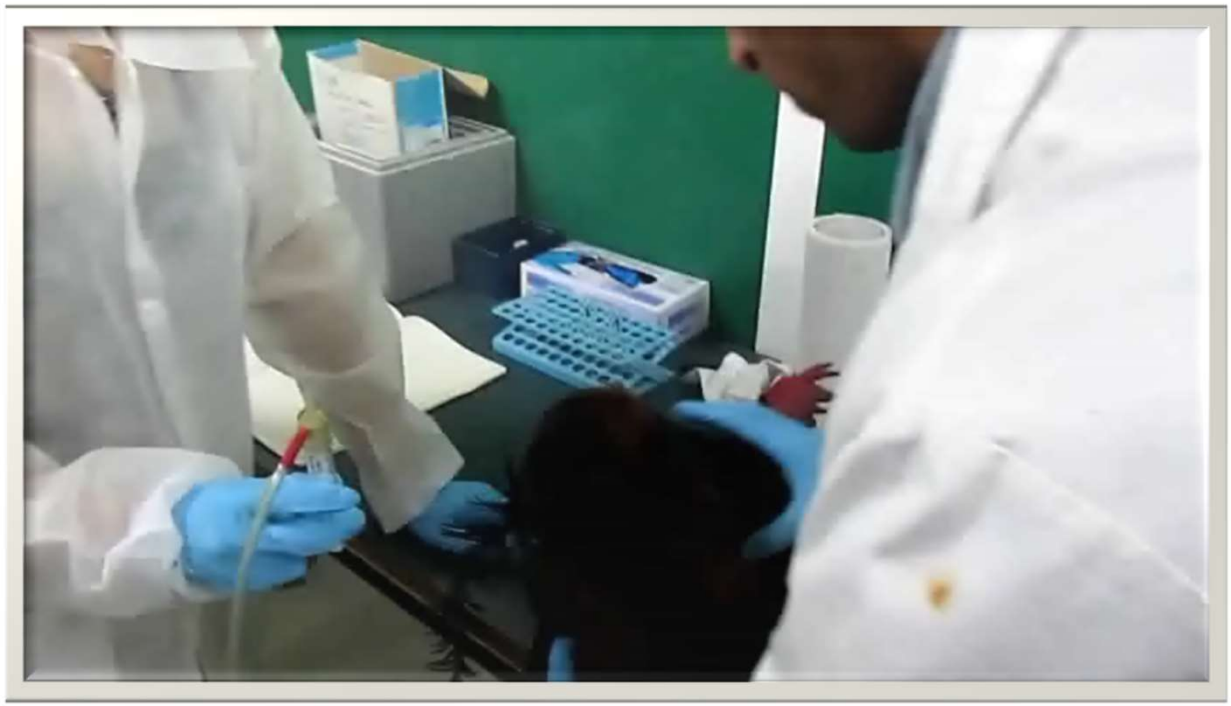
17 BND and 18 SLZ

The house:

single cages in controlled environment

The semen collection:

ejaculates were routinely collected twice per week.



Lake and Stewart, 1978

Materials & Methods

Physiological traits

- body weight (LW)
- semen volume (VOL)
- semen concentration (CON)
- total sperm output (TSO)

Statistic Analysis

Proc GLM - SAS® 9.4
(source of variation: breed)

PCA (Past®4.05).

Behavioral traits - Reactivity

Tonic Immobility:

number of inductions (N, max 3; TINI),

TI duration (s, max 180 s, TIDU),

number of vocalizations (n, TIVO);

Emergence Test (max latency time 180s):

head emergence out of the box latency (s, ETHE),

first step out of the box latency (s, ETFS),

bird's complete emergence out of the box latency (s, ETCE),

number of vocalizations (n, ETVO),

defecation (n, ETDE).

Results

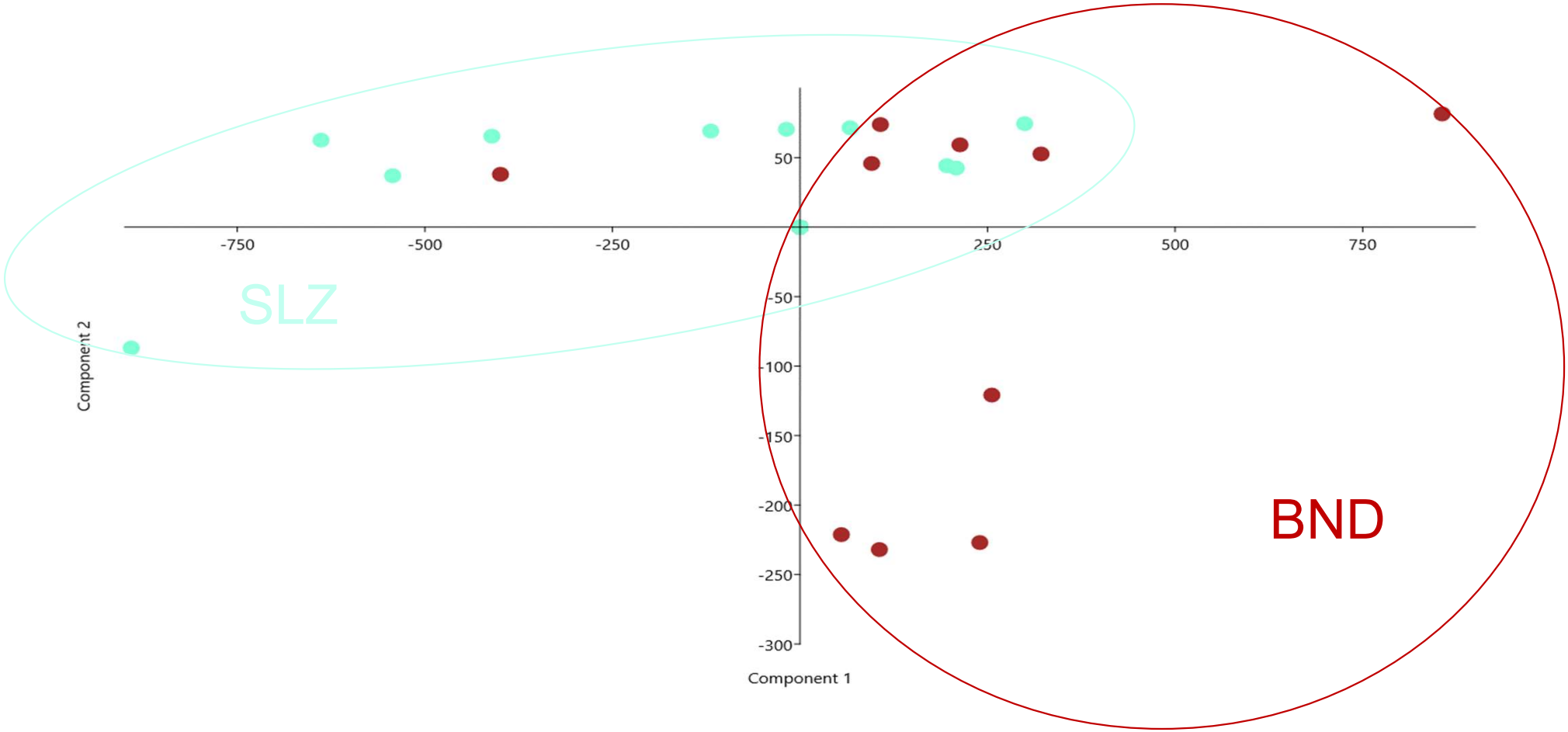
Semen quant. Par.; mL, N*10^9/mL, N*10^9; P≥ 0,05			
	VOL	CONC	TSO
BND	0.27 ± 0.03	2.40 ± 0.28	0.68 ± 0.15
SLZ	0.24 ± 0.03	2.63 ± 0.26	0.71 ± 0.14

Live Weight (g), LS means ± SE, P≤0,05	
BND	3209.60 ± 114.65
SLZ	2840.50 ± 114.65

Tonic Immobility; Ind. (N), Latency (s), Voc. (N); P≥ 0,05			
	IND	DUR	VOC
BND	1.2 ± 0.18	100.70 ± 24.12	0.30 ± 0.21
SLZ	1.4 ± 0.18	114.40 ± 24.12	0.00 ± 0.21

Emergence Test, Latencies (s), LS means ± SE, P≤0,05				
	Head	First Step	Comp. Emerg.	Vocalization (N)
BND	117.00 ± 18.95	120.10 ± 18.36	120,50 ± 18.24	2.9 ± 0,78
SLZ	173.20 ± 18.95	173.30 ± 18.36	173.40 ± 18.24	0.00 ± 0.78

Results



PCA analysis revealed high breed-based clustering ability of the birds on PC1 and PC2. PC1 described the 90.29% of the variance and it was influenced by LW and TIDU (99.89%, 4.29%).

Conclusions

The two breeds significantly differed in relation to their behavioural reactivity and body weight

Smaller differences were found in semen production ability.

SLZ roosters combined lighter LW with higher fear response

Birds' handling

Take home message

"Natural selection favours different behaviours in different populations, with the result that populations differ in behaviour as well as other characteristics"

Appleby, M. C., Mench, J. A., & Hughes, B. O. (2004). Poultry behaviour and welfare. CABI Publishing, Wallingford Oxfordshire, UK.