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Morphological assessment of 12 Italian autochthonous chicken breeds

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Aim

This study aims to describe morphological variability of 12 Italian autochthonous chicken breeds including nine from northern Italy and three from central Italy (ANC, MOD, ROM).

Materials & methods

An updated biometrical measurement protocol was established starting from phenotypic characterization guidelines released by FAO (2012).
A total of 288 individual animals, twenty-four chickens (♂/♀) per breed, were selected.
Six different measures including live body weight (LBW), body length (BL), shank length (SL), shank width (SW), breast width (BW), wingspan (WS). were calculated for each animal:
Means and standard errors of measures were estimated by using R software.


Live body weight (LBW)


Body length (BL)


Breast width (BW)


Shank width (SW)


Wingspan (WS)


Shank length (SL)

Results

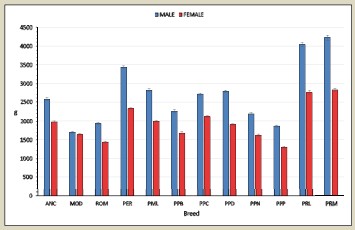


Figure 1. Means and standard errors of Body live weight (BLW) for each breed.

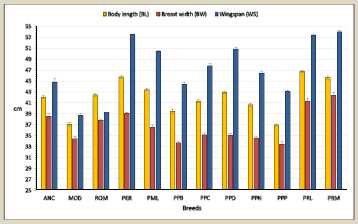


Figure 2. Means and standard errors of body length (BL), breast width (BW), wingspan (WS) for each breed in **male.**

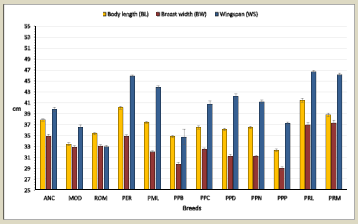


Figure 3. Means and standard errors of body length (BL), breast width (BW), wingspan (WS) for each breed in **female.**

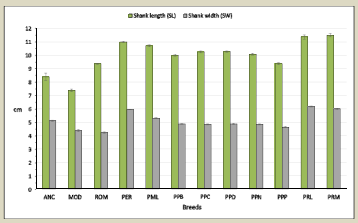


Figure 4. Means and standard errors of shank length (SL), shank width (SW) for each breed in **male.**

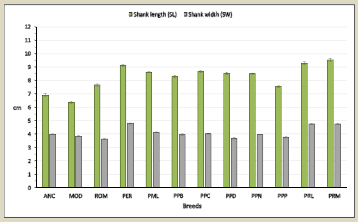
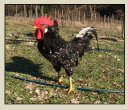


Figure 5. Means and standard errors of shank length (SL), shank width (SW) for each breed in **female.**

Breeds



♀ Ancona (ANC) ♂



♀ Modenese (MOD) ♂



♀ Romagnola (ROM) ♂



♀ Ermellinata di Rovigo (PER) ♂



♀ Millefiori di Lonigo (PML) ♂



♀ Polverara Bianca (PPB) ♂



♀ Padovana Camosciata (PPC) ♂



♀ Padovana Dorata (PPD) ♂



♀ Polverara Nera (PPN) ♂



♀ Pepoi (PPP) ♂



♀ Robusta Lionata (PRL) ♂



♀ Robusta Maculata (PRM) ♂

Discussion

In every breed, an evident sexual dimorphism was found.
Means of body length and breast width showed low variability among breeds, with the lowest value in PPP female, and maximum in PRL male for body length (46.8±0.48), and in PRM male for breast width (42.3±1.04). On the contrary, wingspan and live body weight showed great variability among breeds. Indeed, especially live body weight mean values define a large range from the highest value in PRM (♂4222g±130.1; ♀2831.67g±73.1) to the two lowest values in MOD males (♂1695g±40.5) and PPP females (♀1293.3g±63.3).
Furthermore, breeds from central Italy seem to be a general smaller size compared with the northen Italy breeds (excepted for PPP).

Conclusion & future analysis

Three breeds from northern Italy (PRM, PRL, PER) seem to have a better morphology for meat production, on the contrary, MOD and ROM (central Italy) showed morphological conformation that could be better related to extensive or semi-extensive rearing. Genomic analyses will explain the potential different genetic background, quantify genetic distances among breeds and can correlate genotype with phenotype features. Finally, another aspect of this study will be to find an economic space for products (meat and eggs) obtained from these breeds, in order to encourage their rearing as a source of economic gain.