2. MORPHO-BIOMETRIC CHARACTERIZATION OF TWO LOCAL CHICKEN BREEDS IN VIETNAM

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ABSTRACT

In Vietnam, 84% of the 188 million chickens are indigenous. The following local breeds are recorded: Ri, Mia, Te, Tau Vang, Ac, Oke, H'mong, Tre, Choi, Phu Lu Te, To, Dan Khao, Ho, Dong Tao and Van Phu. Mia, Ho and Dong Tao are reported as endangered or critical, while the Van Phu breed could have been lost during the last years. The phenotypes of the Mia and Ri breeds are described as quite close. The objective of this study is to characterize phenotypically Ri and Mia chickens. The morpho-biometric characterization was conducted according to the recommendation of FAO (1981). A total of 227 adults Ri (174 females and 53 males) and 53 adults Mia (18 males and 35 females) were used for the study. The following colors were observed for Ri and Mia respectively: tan (43.17% and 37.73%), gold salmon (24.23% and 26.42%), wheat (15.42% and 26.42%), dark red (9.69% and 5.66%), silver salmon (3.52% and 3.77%) and copper black (3.96% and 0%). Comb was mostly simple (91.19% and 100%) and red (100% and 100%) for both breeds. The wattles were of the same color as the comb while the color of the legs was yellow. The weights of adult males (2433.89g) and females (1752.86g) of the Mia breed were significantly higher than those of Ri (2053.02g and 1459.22g for males and females respectively). The results show that the external aspect of both breeds is not very different while body weights in the Ri breed were found lower than in the Mia breed.

Key words: Biodiversity, chicken, Ri, Mia, Vietnam.

I. INTRODUCTION

With a population of about 86 million inhabitants and an average density of 261.9 inhabitants per square km, Vietnam is the third populous country in South East Asia; over 70% of population live in rural areas. Aviculture is a very important sector of agriculture in Vietnam, occupying the 2nd position after the swine sector. It is dominated by local poultry breeds (with 158 million local poultryindividualscompared to30 million exotic individuals used for intensive breeding). The local hen breeds combined with the local duck breeds, represent over 89 % of the total national Vietnamese avian population.The following local breeds are recorded: Ri, Mia, Te, Tau Vang, Ac, Oke, H'mong, Tre, Choi, Phu Lu Te, To, Dan Khao, Ho, Dong Tao and Van Phu. Mia, Ho and Dong Tao are reported as endangered or critical, while the Van Phu breed could have been lost during the last years (Moula *et al*., 2011). The phenotypes of the Mia and Ri breeds are described as quite close. The objective of this study is to characterize phenotypically Ri and Mia chickens.

II. MATERIALS AND METHODS

The morpho-biometric characterization was conducted according to the recommendation of FAO (1981). A total of 227 adults Ri (174 females and 53 males) and 53 adults Mia (18 males and 35 females) were used for the study.

The different body measurements were recorded in accordance with the FAO recommendations (1981), by means of a digital balance, an electronic sliding caliper and a tape measure. The collected data were sex, body weight and reported age of animal, thoracic girth, feathers type and color, the comb's type, length, height and color, wattles' height and color, tarsus length and diameter, wings' length as well as the length and color of the beak.

All statistical analyses were performed with the SAS software (SAS Institute, 2001). The analysis of variance was conducted using the *general linear model* (GLM) procedure. The effects of breed, sex and interaction (breed x sex) weretested for quantitative variables.

III. RESULTS

Six and five colors (varieties) were observed for Ri and Mia respectively. The following colors were observed for Ri and Mia respectively: tan (43.17% and 37.73%), gold salmon (24.23% and 26.42%), wheat (15.42% and 26.42%), dark red (9.69% and 5.66%), silver salmon (3.52% and 3.77%) and copper black (3.96% and 0%). Comb was mostly simple (91.19% and 100%) and red (100% and 100%) for both breeds. The wattles were of the same color as the comb while the color of the legs was yellow.

Results for body measurements are presented in Table 1. Breed and sex have a significant influence on most traits ($P<0.05$) except length of beak, length of neck, length of back, thoracic circumference for breed and length of beak for sex ($P>0.05$). Interaction (breed x sex) was observed for small diameter and large diameter of tarsus ($P<0.01$). The body weights of adult males (2433.89g) and females (1752.86g) of the Mia breed were significantly higher than those of Ri (2053.02g and 1459.22g for males and females respectively).

IV. DISCUSSION

The atlas of Vietnamese chicken breeds reports the existence of one variety in the Ri and Mia breeds (Su et al., 2004). Eaton et al (2006) considers Ri as a generic name for all local Vietnamese chicken breeds. The present study describes the existence of5 varieties for Mia (tan, gold salmon, wheat, dark red and silver salmon) and 6 varieties for Ri(tan, gold salmon, wheat, dark red, silver salmonand copper black) .

Asmall number of Mia was used in the study because of the endangered status of this breed. Indeed, in a recent study of Moula et al. (2011), few farmers in northern Vietnam ownedMia chicken. Inversely, Ri chickenare widely present in Vietnam with more than 12 million subjects (Thuy and Vang, 2002; Eaton *et al*., 2006).

The results show that Mia is taller and heavierthan Ri, while the colorsin the two breeds are quite close. Thedistinction between the two breeds is not clear. Molecular tools could possibly be used to distinguish between breeds and between varieties within breed.

Table 1. Body measurements of Mia and Ri breeds (Least square means ± standard error)

1.1.1. Variables	***1.1.2 ex***	***1.1.3. Breed***		***1.1.4. Effects***			***1.1.5. 2***
		1.1.6. Mia	***1.1.7. Ri***	***1.1.8. reed***	***1.1.9 ex***	***1.1.10. Bree d x Sex***	
1.1.11. Weight (g)	*1.1.*	*1.1.13. 1752.85±4 4.82a*	*1.1.14. 1459.22±20. 10b*	*1.1.15. **	*1.1.1 **	*1.1.17. ns*	*1.1.1 .5*
	1.1.	*1.1.20. 2433.89±6 2.50a*	*1.1.21. 2053.02±36. 42b*				*7*
1.1.22. High of comb(mm)	*1.1.2*	*1.1.24. 58.89±2.85 a*	*1.1.25. 40.44±1.28b*	*1.1.26. **	*1.1.2 **	*1.1.28. ns*	*1.1.2 .7*
	1.1.3	*1.1.31. 11.38±3. 98*	*1.1.32. 10.07±2.3 2*				*2*
1.1.33. Lengthofco mb(mm)	*1.1.3*	*1.1.35. 31.77±1.80 a*	*1.1.36. 24.31±0.81b*	*1.1.37. *	*1.1.3 **	*1.1.39. ns*	*1.1.4 .7*
	1.1.4	*1.1.42. 72.17±2. 51*	*1.1.43. 65.89±1.4 6*				*5*
1.1.44. Lengthof tarsus (mm)	*1.1.4*	*1.1.46. 74.01±1.26 a*	*1.1.47. 68.41±0.56b*	*1.1.48. **	*1.1.4 **	*1.1.50. ns*	*1.1.5 .6*
	1.1.5	*1.1.53. 90.91±1. 75*	*1.1.54. 89.39±1.0 2*				*0*
1.1.55. Small diameter of tarsus(mm)	*1.1.5*	*1.1.57. 11.34±0.20 a*	*1.1.58. 10.23±0.09b*	*1.1.59. *	*1.1.6 **	*1.1.61. *	*1.1.6 .5*
	1.1.6	*1.1.64. 13.15±0. 27*	*1.1.65. 12.89±0.1 6*				*0*
1.1.66. Large diameter of tarsus(mm)	*1.1.6*	*1.1.68. 13.15±2. 35*	*1.1.69. 12.75±1.0 5*	*1.1.70.	*1.1.7 **	*1.1.72. **	*1.1.7 .1*
	1.1.7	*1.1.75. 32.14±3.27 a*	*1.1.76. 18.98±1.91b*				*2*
1.1.77. Length of beak (mm)	*1.1.7*	*1.1.79. 33.60±2. 30*	*1.1.80. 33.79±1.3 5*	*1.1.81. s*	*1.1.8 s*	*1.1.83. ns*	*1.1.8 .0*
	1.1.8	*1.1.86. 38.47±4. 18*	*1.1.87. 37.92±2.4 4*				*1*
1.1.88. High of wattles (mm)	*1.1.8*	*1.1.90. 27.11±1.76 a*	*1.1.91. 19.86±7.95b*	*1.1.92. *	*1.1.9 **	*1.1.94. ns*	*1.1.9 .6*
	1.1.9	*1.1.97. 58.94±2. 46*	*1.1.98. 55.23±1.4 3*				*9*
1.1.99. Length of neck	*1.1.*	*1.1.102. 15.09±0 .23*	*1.1.103. 15.01±0. 10*	*1.1.10 s*	*1.1.1 **	*1.1.106. ns*	*1.1.1 .5*
1.1.100. (cm)	*1.1.*	*1.1.109. 18.28±0 .32*	*1.1.110. 18.23±0. 19*				*2*
1.1.111. Lengthofb ack	*1.1.*	*1.1.114. 21.03±0 .45*	*1.1.115. 20.80±0. 20*	*1.1.11 s*	*1.1.1 **	*1.1.118. ns*	*1.1.1 .3*
1.1.112. (cm)	*1.1.*	*1.1.121. 25.28±0 .63*	*1.1.122. 25.49±0. 37*				*6*
1.1.123. Lengthof drumstick (cm)	*1.1.*	*1.1.125. 14.30±0.2 4a*	*1.1.126. 12.79±0.11b*	*1.1.12 **	*1.1.1 **	*1.1.129. ns*	*1.1.1 .6*
	1.1.	*1.1.132. 17.42±0 .34*	*1.1.133. 17.06±0. 20*				*7*
1.1.134. Thoracic circumference (cm)	*1.1.135. F*	*1.1.136. 26.46±0.41*	*1.1.137. 25.76±0.18*	*1.1.138. n s*	*1.1.139. * **	*1.1.140. ns*	*1.1.141. 0 .43*
	1.1	*1.1.143. 30. 83±0.57*	*1.1.144. 30. 57±0.33*				

On a same row, values bearing a same letter a statistically not different ($p < 0.05$).
***: $P < 0.001$; **: $P < 0.01$; *: $P < 0.05$; $P \geq 0.05$. R^2: coefficient of determination

V.CONCLUSION

The results show that the external aspect of both breeds is not very different while body weights in the Ri breed were found lower than in the Mia breed.

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