

Reproductive Performance of Thai Native Chicken (Pradu – Hangdum Chiangmai) in Local Condition

P. Sawasdee¹, A. Leotaragul² and J. Kammongkun³

ABSTRACT: Data were collected from Pradu – Hangdum Chiangmai (PD - CM) chicken produced at Chiangmai Livestock Breeding and Research Center, Department of Livestock Development (DLD), Thailand. 361 birds from 57 sires and 304 dams at age 12 weeks were tested in local condition and raising by farmer. The results showed that age, body weight and egg weight of first egg were 229.65 ± 22.09 days, $1,623.90 \pm 219.70$ gram and 33.76 ± 5.27 gram respectively. Number of egg, number of chicks and hatchability of first clutch were 10.62 ± 2.31 eggs, 7.40 ± 2.34 birds and 69.84 ± 19.92 percentages. Heritability of body weight at first egg and fist egg weight were 0.68 and 0.43 respectively. Heritability of age at first egg and number of eggs at first clutch were 0.30 and 0.28 respectively, for number of eggs at first clutch and hatchability were 0.19 and 0.11.

Keywords: Thai native chicken, Pradu – Hangdum Chiangmai, reproductive performance, egg production, local condition

Introduction

Thai native chickens are being raised for several purposes, home consumption and keeping fighting cocks werethe main reasons. Generally, a chewy texture, good meat taste, the meat with thin skinned, tender meat that has less fat and lower cholesterol is preferred by the consumers. Thai native chicken are raised by small farmer and these birds grow slowly and are low feed efficiency. In addition, they are generally reared under free range with a handful grain supplementation and unmanaged mating systems of crossbreed probably resulting to the number of purebred were decreased. Pradu – Hangdum Chiangmai (PD-CM) is one of the Thai native chickens which faced the same situation of problem relevant with the number of purebred. Therefore, the variety was recalled under a well organized research work during the year

2002 - 2007 from a joint cooperation between the Department of Livestock Development (DLD) and Thai Research Fund (TRF). The work was aimed to conserve the variety and to utilize the meat as a high quality protein source. Afterward, the foundation stocks of Thai native chickens (PD-CM) were established at livestock breeding and research centers of Chiangmai. In order to improve the development of Thai native chicken, this study were conducted to investigated the performance test and reproductive performance in local condition of chicken to evaluate the formation of foundation stock of PD - CM

Materials and Methods

Data

The data used in this study were collected from PD – CM chicken produced at Chiangmai Live-

¹ Department of Livestock Development, Phayathai Rd., Ratchathewee, Bangkok, Thailand. 10400.

² Chiangmai Livestock Breeding and Research Center, Amphoe Sanpatong, Chiangmai. Thailand. 50120.

³ Loei Livestock Research Station, Amphoe Wangsaphung, Loei. Thailand. 42130

* Corresponding author: ppwan23@hotmail.com

stock Breeding and Research Center, DLD, Thailand from birth to 12 weeks of age, were tested in local condition and raising by farmers until female chickens laid eggs for 1 years. The number of animals and records by trait were shown in **Table 1**.

Statistical model

A mean value and standard derivation was used to find out the body weight at first egg, first egg weight, number of eggs, number of chicks and hatchability of first clutch. The BLUPF90 PC – PAK 1.5 (Duangjinda et al., 2001) package were used for the genetic parameter estimation.

Results and Discussion

Body weight and some traits at egg

The means, their standard derivations of body weight and some traits at egg were shown in **Table 1**. Body weight at 20 and 24 weeks of males were $1,640.31 \pm 217.43$, $1,824.17 \pm 361.50$ and females were $1,138.14 \pm 179.46$, $1,301.12 \pm 204.62$ gram respectively. The results of the study lower than previous report in general native chicken (1,962, 1,536 and 2,371, 1,872 gram) by Amnuay et al. (1997) but similar with Sawat and Kriengkrai (1982) were reported that the body weight of native chicken at 16 weeks was 1.13 Kilogram.

The reproductive performances in local condition were shown in **Table 1**. Body weight, first egg weight and age at first egg were $1,623.90 \pm 219.70$ gram, 33.76 ± 5.27 gram and 229.65 ± 22.09 days respectively, parallel with Wirote et al. (1988) re-

ported that age at first egg of native chickens in local condition was 212 days and similar with Siripun et al. (1996) reported that body weight, first egg weight and age at first egg were 1,755.28, 33.72 gram and 225.21 days respectively. In addition, number of egg, number of chicks and hatchability at first clutch were 10.62 ± 2.31 eggs, 7.40 ± 2.34 birds, $69.84 \pm 19.91\%$ and second clutch were 10.72 ± 1.55 eggs, 7.47 ± 2.68 birds, $68.89 \pm 15.16\%$ respectively, similar with Onanong et al. (2004) reported that number of egg was 11.36 ± 11.65 eggs/clutch, number of chicks was 6.84 ± 7.12 birds/clutch and hatchability was $60.12 \pm 61.50\%$ of general native chickens raising in rural area.

Heritability

The heritabilities estimated with some traits were shown in **Table 2**. The estimated heritabilities for body weight of age 20 and 24 weeks were 0.33 and 0.44 respectively. The results of the study confirmed to the estimate of 0.40 - 0.50 reported by Taylor and Field (2001). The estimated heritabilities for body weight, egg weight and age of first egg were 0.68, 0.43 and 0.30 respectively, similar with the estimate of body weight and age of first egg were 0.46 and 0.41 reported Suparat (2002). Moreover, the estimated heritabilities for number of egg, number of chicks and hatchability at first clutch were 0.19, 0.28 and 0.11 respectively, the results from the local condition and natural hatchability confirmed with the estimate of the number of egg was 0.12-0.21 reported by Crawford (1993).

Table 1 Means \pm SD of body weight and some traits at egg of PD-CM

Traits	Males	Females
Number of records (bird)	57	304
BW at, (g)		
- 20 weeks	16,40.31 \pm 217.43	1,138.14 \pm 179.46
- 24 weeks	1,824.17 \pm 361.50	1,301.12 \pm 204.62
At first egg		
- Body weight (g)	-	1,623.90 \pm 219.70
- Egg weight (g)	-	33.76 \pm 5.27
- Age (day)	-	229.65 \pm 22.09
At clutch 1		
- No. of eggs (egg)	-	10.62 \pm 2.31
- No. of chicks (bird)	-	7.40 \pm 2.34
- Hatchability (%)	-	69.84 \pm 19.91
At clutch 2		
- No. of eggs (egg)	-	10.72 \pm 1.55
- No. of chicks (bird)	-	7.47 \pm 2.68
- Hatchability (%)	-	68.89 \pm 15.16

Table 2 Heritability estimates and standard errors of PD-CM

Traits	Heritability	SE
BW at		
- 20 weeks	0.33	0.20
- 24 weeks	0.44	0.23
At first egg		
- Body weight	0.68	0.42
- Egg weight	0.43	0.25
- Age	0.30	0.21
At clutch 1		
- No. of eggs	0.19	0.15
- No. of chicks	0.28	0.21
- Hatchability	0.11	0.09

Conclusion

The principle results were described as following:

1. Performance test and reproductive performance in local condition of PD – CM chicken, body weight at 20 and 24 weeks of males were $16,40.31 \pm 217.43$, $1,824.17 \pm 361.50$ and females were $1,138.14 \pm 179.46$, $1,301.12 \pm 204.62$ gram respectively. Body weight, first egg weight and age at first egg were $1,623.90 \pm 219.70$ gram, 33.76 ± 5.27 gram and 229.65 ± 22.09 days respectively. Number of egg, number of chicks and hatchability at first clutch were 10.62 ± 2.31 eggs, 7.40 ± 2.34 birds, $69.84 \pm 19.91\%$ and second clutch were 10.72 ± 1.55 eggs, 7.47 ± 2.68 birds, $68.89 \pm 15.16\%$ respectively.

2. Body weight at 24 weeks, body weight and egg weight at first egg traits were high heritability estimates. Body weight at 20 weeks, age at first egg and number of chicks at first clutch traits were medium heritability estimates. Number of egg and hatchability at first clutch were low heritability estimates.

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