

Effects of village, sex, scholastic qualification and age of farmers on rearing of backyard chickens that phenotypically show naked neck (Na) and Dwarfism (Dw) genes in Kgatleng District, Botswana

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Abstract

Village chickens in Botswana have been poorly characterised to date. Therefore, the objectives of this study were to find the effects of village, sex, scholastic qualification and age of farmers on rearing of backyard chickens that phenotypically show naked neck (Na) and Dwarfism (Dw) genes in Kgatleng District of Botswana. One hundred farmers from ten villages who rear village/backyard chickens were interviewed. There were 1676 chickens counted from these villages, out of which 8.41 and 4.00% had Na and Dw genes respectively. The frequency of Na and Dw genes did not differ significantly between villages. Sex, scholastic qualification and age did not significantly affect rearing of any chicken phenotype. Both the Na and Dw genes have production advantages over the normal chickens, so great attention should be paid to them so that in the longer run they do not become extinct. This calls upon proper characterisation of chicken genetic resources in Botswana with the view of conserving the diverse genotypes for future generations and production.

Keywords: Village, chicken, Na and Dw genes, sex, age and scholastic qualifications

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Introduction

The genetic potential of village chickens to increase production under tropical systems is generally recognised due to their adaptability to harsh tropical climates. However, these genotypes have been poorly characterised in Botswana to date. Therefore, the objectives of this study were to find the effects of village, sex, scholastic qualification and age of farmers on rearing of backyard chickens that phenotypically show naked neck (Na) and Dwarfism (Dw) genes in Kgatleng of Botswana.

Materials and Methods

Ten farmers were randomly sampled from each of the 10 villages in Kgatleng District of Botswana (Table 1). Data were collected over a period of three months. The main methods used for data collection were a formal questionnaire administered by one of the authors and informal interview of children and neighbours of the selected farmers.

Table 1 Average number (standard error) of chicken phenotypes reared per farmer in Kgatleng district, Botswana

| Village | Na | Dw | Normal chickens |
|----------------|------------|-------------|-----------------|
| Bokaa | 0.20(0.13) | 0.40 (0.40) | 11.20(1.10) |
| Mabalane | 1.40(1.08) | 0.20 (0.20) | 17.60(4.13) |
| Malolwane | 0.80(0.55) | 0.20 (0.20) | 11.00(1.42) |
| Matebele | 0.20(0.13) | 0.70 (0.37) | 19.10(4.12) |
| Mathubudukwane | 2.60(1.14) | 0 | 9.40(2.06) |
| Mochudi | 3.00(2.12) | 2.80 (1.36) | 18.00(3.32) |
| Morwa | 2.90(1.92) | 1.20 (0.47) | 11.30(1.13) |
| Oodi | 1.60(0.76) | 0.10 (0.10) | 14.50(3.23) |
| Rasesa | 0.70(0.37) | 0.50 (0.34) | 12.30(2.77) |
| Sikwane | 0.70(0.47) | 0.60 (0.50) | 22.40(6.03) |

Statistical Analysis

Means and their standard errors presented in Tables 1-4 were derived from Procedure Means in Statistical Analysis System (SAS, 1988). These were analysed using chi-square (without an *a priori*) following Little & Hills (1978) in Minitab (Minitab, 1996) on total number of chicken genotype in each subcategory (Table 1-4).

Results and Discussion

Table 2 Average number (standard error) of chicken phenotypes reared per farmer and the number of farmers (N) in each sex category in Kgatleng district, Botswana

| Sex | N | Na | Dw | Normal chickens |
|--------|----|------------|------------|-----------------|
| Female | 83 | 1.23(0.36) | 0.65(0.21) | 14.64(125) |
| Male | 17 | 2.29(0.82) | 0.76(0.28) | 14.88(1.81) |

Table 3 Average number (standard error) of chicken phenotypes reared per farmer and the number of farmers (N) in each qualification category in Kgatleng district, Botswana

| Qualification | N | Na | Dw | Normal chickens |
|---------------|----|------------|------------|-----------------|
| Primary | 92 | 1.35(0.32) | 0.64(0.19) | 14.48(1.12) |
| Secondary | 7 | 2.43(1.17) | 1.14(0.40) | 17.14(4.39) |
| Tertiary | 1 | 0 | 0 | 16 |

Table 4 Average number (standard error) of chicken phenotypes reared per farmer and the number of farmers (N) in each age group category in Kgatleng district, Botswana

| Age groups (years) | N | Na | Dw | Normal chickens |
|--------------------|----|------------|------------|-----------------|
| 20-39 | 27 | 1.15(0.40) | 0.52(0.20) | 15.19(1.68) |
| 40-49 | 30 | 1.63(0.58) | 1.50(0.51) | 13.57(1.70) |
| 50 and plus | 43 | 1.42(0.53) | 0.19(0.13) | 15.14(1.96) |

Both Na and Dw genes did not differ significantly ($P > 0.05$) between villages. As pointed out by Merat (1990) both genes confer among other things heat tolerance and higher egg production than normal chickens, which are quite useful traits under tropical production. Therefore farmers should be made aware of the importance of these genes.

Sex did not affect the rearing of any chicken genotype (Table 2). This was supported by the view that most female farmers did not know the advantages of chicken genotypes with Na and Dw genes compared to normal ones. Scholastic qualification did not significantly affect rearing of chicken genotypes (Table 3). Most respondents of the different education levels did not know anything about the genetic potential of the Na and Dw genes to increase production.

Age had no significant effect on rearing of any chicken genotype. This was despite the fact the most respondents aged 40-49 years claimed that dwarf birds consumed less feed and that they produced more eggs per clutch than normal sized chickens.

Conclusion

None of the factors considered namely, village, sex, scholastic and age affected the rearing of any chicken genotype. Generally farmers were not well informed about the potential of Na and Dw genes to

increase production more than the normal genotypes. The indigenous chickens need to be properly characterised so that the production potential of the birds can be exploited to increase their value to the rural smallholder. Farmers should be made aware of the advantages of these genotypes over the normal genotypes.

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