MANAGEMENT PRACTICES OF NATIVE CHICKEN (*Gallus gallus domesticus* Linn.) PRODUCTION IN PALAWAN, PHILIPPINES

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ABSTRACT

A total of 108 raisers were randomly sampled and interviewed using a structured questionnaire to determine the management practices in the production of native chickens in Palawan. Correlation analysis showed that the number of chickens raised was not influenced by the respondent's socio-demographic profile. However, the number of chickens raised were positively correlated (*P*<0.05) with duration of raising, feed cost and number of chickens consumed. Results showed that most raised native chickens traditionally in the range and do not provide housing but feed them twice a day with farm products and by-products by broadcasting on the ground. Drinking water is provided once a day in improvised water trough without supplementation. Selection of breeder/replacement stocks and chickens for slaughter/sale is based on body size. Majority provided adequate nests and practice random mating, natural incubation and brooding. While record keeping and vaccination were never done, few respondents practice deworming, disease treatment, ethnoveterinary practices, disinfection

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and artificial insemination. The average number of eggs laid per clutch was 10.44 ± 1.97 while hatchability was 76.44% ± 13.48. The mean number of chicks weaned was 5.68 ± 2.06 with a percent liveability of 66.89% ± 20.20. Dead birds were disposed by burying. In addition, chickens produced were primarily for home consumption.

Keywords: native chickens, Palawan, production practices

INTRODUCTION

The important role of native chickens in the Philippine economy lies not on its effect to the gross national income but on serving as a stable and reliable source of protein food for the rural folks and as a direct support for their immediate needs (Lambio, 2000). Aside from this, native chickens being commonly raised in the countryside can adapt, survive and reproduce under adverse conditions with marginal care and low production inputs.

Several researches were done to describe the management and marketing practices undertaken by native chicken raisers (Sulinthone, 2006; Celestino, 2010; Oñate, 1991; Mangubat, 2004; Magpantay *et al.*, 2006; Lingaya, 2007; Cabarles, 2012) in different parts of the country. However, no research has been conducted on the production and management practices of native chickens in the province of Palawan. Conducting such studies is advantageous since the province has been identified in several researches (Lambio, 2000; Lambio *et al.*, 1991; Lambio and Barrion, 1998) as the source or probably the origin of Paraoakan, a genetic group of Philippine native chicken which was identified by FAO (2012) as a breed. It is also in line with the mission of the Philippine Native Animal Development Program (PNAD; DA Admin. Order No. 15 Series 2010). The program seeks to develop policies and initiatives for sustainable conservation, production and marketing of native animals. Such policies can be conceptualized and constructed only with information gathered from characterization studies. Therefore, the objective of the study is to determine the management practices currently employed in the production of native chickens in Palawan.

MATERIALS AND METHODS

Sampling procedure

The province of Palawan was divided into three regions - northern, central and southern. Probability proportional to size sampling was done to determine the municipalities in each region, the barangays in each municipality and the native chicken raisers in each barangay who served as respondents in this study. Probability proportionate sampling in this study means the number of chicken inventory in a municipality or a barangay corresponded to the number of chances where the municipality or the barangay could be drawn. This gave higher chances for the municipalities or baranggay with greater number of chicken inventories to be drawn.

Secondary data in chicken inventory were obtained from the reports of the Palawan Provincial Bureau of Agricultural Statistics dated July 2006 which was the only comprehensive data available at the time. Likewise, assistance from the local officials was obtained to facilitate the survey and the identification of the respondents. A total of 108 respondents (36 from each region) were interviewed using a pre-tested structured questionnaire. The total number of respondents corresponds to 95% level of confidence and 10% levels of precision (Israel, 2009) in determining data regarding the production performance of the native chickens in Palawan.

Data collected and statistical analysis

Flock structure, production performance and management practices of native chickens were identified. Statistical tools such as frequency counts, percentage, means and standard deviations were used. Data were classified and consolidated by category, and was analysed using Minitab 14 Statistical Software. Correlation analysis was also performed. Chi-square Goodness of fit test and Z-test on proportion was used to determine whether the proportions of the raisers were uniformly distributed in the different categories. Statistical significance was set at $P \leq 0.05$ for all statistical tests.

RESULTS AND DISCUSSION

Socio-demographic profile of the respondents

The mean age of the respondents was 43.43 ± 13.74 years (Table 1). The household size ranged from 2 to 9 with an average of 4.81 ± 1.91. Monthly income averaged around PhP 2,597.45 ± 2,226.37 with only around five percent (4.63%) of the respondents obtaining their income from raising animals while majority of them (60.2%) generate income from crop production mostly raising coconuts (40.7%) and rice (26.8%). The average land area where native chickens are raised is about 2.34 ± 2.59 hectares. Majority of the raisers (72.23%) owned the land and it is observed that farms in southern Palawan are larger than farms in northern Palawan. The respondents have been raising native chickens for an average of 16.27 ± 13.09 years, ranging from 0.5 to as long as 60 years. A mean of 11.10 ± 9.11 heads of mature chickens were being raised by the respondents and they were able to consume a mean of 12.35 ± 10.58 heads of chickens yearly.

Table 1. Socio-demographic characteristics of the respondents

Criteria	Mean ± SD	Min	Max
Age, years	43.43 ± 13.74	18	74
Household size	4.81 ± 1.91	1	9
Monthly income, PhP	2,597.45 ± 2,226.37	250	10,833
Farm size, hectares	2.34 ± 2.59	0.3	17
Duration of raising, years	16.27 ± 13.09	0.5	60
Average feed cost, PhP	57.30 ± 127.50	0	800
Yearly consumption of chickens, heads	12.35 ± 10.58	0	48
Mature chickens raised, heads	11.10 ± 9.11	2	63

Classes and number of chickens raised. The proportion of native chickens in particular age-group reared by the respondents during the time of the study is shown in Table 2. On the average, 10.0% of the flock are roosters, 21.1% are hens, 22.1% are growers and around 46.8% are chicks. This result approximates the flock structure of native chickens in Dolores, Quezon observed by Magpantay (2006). A mating ratio of 1:2.11 (rooster to hen) was

observed which means that the number of male birds raised is more than the recommended representative sets of adult animals in poultry production *i.e.* 10-30 males and 100-300 females (FAO, 2012).

Table 2. Proportion of native chickens in particular age-group reared by the respondents during the time of the study.

Age-group of chicken	Number of heads (mean ± SD)	Percentage
Rooster	2.09 ± 1.57	10.0
Hens	4.40 ± 3.14	21.1
Growers	4.61 ± 7.11	22.1
Chicks	9.75 ± 9.68	46.8
Total	20.85 ± 15.86	100.0

Correlation Analysis. Farm size and income were positively related (P<0.05; Table 3), which means that respondents with larger farms generate more income. Likewise, household size and age of the respondents were positively related (P<0.05) implying that household size increases as the respondents becomes older. This supports the close family culture that exists among Filipinos. However, it can be noted that the number of chickens raised was not dependent on income, age of farmers, household size and farm size. This shows that native chicken production does not need specific requirements and can indeed be undertaken with marginal care and low production inputs.

The number of native chickens raised was positively correlated (P<0.05; Table 4) with duration of raising chickens, feed cost, and yearly home consumption of native chickens. This means that more experienced respondents in raising native chickens raise more birds. It also implies that respondents raising more native chicken have more capability to consume its meat. However, the raisers find the need to supplement feeding with increasing native chicken inventories which increases feed costs. These conform to the findings of Magpantay (2006).

Table 3. Correlation analysis of socio-demographic characteristics of respondents.

Item	Income	Age	Household size	Farm size
Age	-0.136			
Household size	-0.155	0.211*		
Farm size	0.206*	0.117	-0.131	
No. of chickens raised	0.001	0.120	-0.008	0.028

*P<0.05

Table 4. Relationships of socio-demographic characteristics with native chicken production.

Item	Income	No. of chickens raised	Duration of raising	Feed cost
No. of chickens raised	0.001			
Duration of raising	- 0.0066	0.287*		
Feed cost	- 0.016	0.198*	0.112	
No. of chickens consumed	0.064	0.230*	0.149	-0.009

*P<0.05

Housing management

Majority of the respondents (64.8%) range the chickens without providing shelter while some of them (26.8%) provide shelters but still range the chickens. Few of the raisers (7.4%) range the chickens, provide shelter and completely confine the chickens during particular periods such as during planting seasons. Natural materials such as bamboos, nipas and buho are commonly used for housing. Magpantay (2006), Sulinthone (2006) and Oñate (1991) reported that majority of the raisers in their respective study areas allowed their native chickens to range and scavenge freely and only few practice semi-confinement during planting season to avoid damage to crops. However, findings of this study is in contrast with the finding of Celestino (2010) who reported that majority of the raisers in Nueva Ecija provide housing to their native chickens.

Feeding management

Almost all of the respondents (99.1%) provide feeds to the native chickens. Farm products such as rice, corn, palay and grated

cassava were commonly given to the chickens by majority (59.2%) of the respondents while some of them (16.7%) also fed farm by-products such as rice bran and rice middling (5.6%), and domestic left-overs (0.9%). Only few raisers (10.2%) gave commercial feeds.

Feeding the chickens twice a day is generally practiced by more than half of the farmers (58.3%). Such practice allows the farmers to inspect their flock and provide them the means to acquaint their chickens with the people in their farms/houses. Provisions of feeds in the afternoon encourage the chicken to return to their roosting grounds. Similar practices have been observed by Sulinthone (2006) and Magpantay (2006). However, native chickens in Camarines Sur were fed only once a day (Oñate, 1991). Broadcasting the feeds in the ground is practiced by majority of the raisers (74.1%). Scattering the feeds in the ground seems to be advantageous by spreading it more evenly where chicks and growers can have a higher chance of feeding. Broadcasting the feeds is also observed in Camarines Sur (Oñate, 1991).

Majority (75.0%) of the raisers provide clean drinking water to their chickens once a day (69.4%) in improvised drinking trough (92.6%) such as shells of giant clams, coconut shells cut in half (bao), plastic containers, basins and old tires cut in half. Majority of them (79.6%) do not supplement the drinking water with vitamins nor antibiotics. Oñate (1991) and Sulinthone (2006) observed in Camarines Sur and in Batangas, respectively that raisers also provide drinking water to their chickens once a day.

Breeding management

Selection practices. Majority (74.1%) of the respondents practice selection of native chickens both for replacement/breeder stocks and for chickens intended for slaughter or sale and their basis for selection is body size and conformation. Big body size and an appealing body conformation is usually preferred (68.4% of the respondents) in selecting replacement/breeder stocks. Some respondents (68.4%) select based on plumage pattern, preferring barred plumage pattern because of the relative value of the saddle feathers to fishermen.

In Dolores, Quezon, Magpantay (2006) observed that body conformation is the more popular basis of selection. In Camarines Sur, selection was based on body size, egg production and

plumage pattern (Onate, 1991). Similarly in Palawan, big body size but those with undesirable body conformation were more common basis in selecting chickens for slaughter or sale.

Mating and breeding practices. Findings also revealed that almost all of the respondents (98.2%) do not pair roosters and hens but practice random natural mating where roosters have the freehand to mate with the hens. Similarly, 96.3% of the respondents provide adequate nests for their hens but nests are placed almost anywhere – from poultry houses to the different areas of the owner's house such as attached to the outside walls, under the house, in the kitchen, in stock rooms and sometimes inside the cabinets. Nests are also placed in trees. It was noted during the conduct of the study that some raisers construct a small "nesting" shed intended only to house several nests. This shed usually has A-type roofing with no walls and has several nests lined-up side by side right under the makeshift roof. No definite material was used by the respondents to make nests.

Almost all (98.2%) of the respondents allowed the mother hen to incubate the eggs and brood the chicks naturally. Only one respondent incubated the eggs artificially using improvised incubators made from Styrofoam boxes and practiced artificial brooding. It was also noted that more than half (68.5%) of the respondents confined the hens and chicks after hatching by caging the hens and chicks or by tying the hens for an average of 7 days to help the hens recover and improve the health of the chicks. It is also a means to avoid the chicks from being eaten by predators. Confinement of the hens and chicks under the owner's housed after hatching is also practiced in Camarines Sur but on a relatively shorter period of time, around 4-7 days (Oñate, 1991).

Flock health management

Deworming practices. Majority (83.3%) of the respondents do not deworm their native chickens but most of those who do (66.7%) use herbal materials such as *Areca catechu* and *Leucaena leucocephala* seeds.

Vaccination and treatment practices. All of the respondents do not practice vaccination while majority of them (72.2%) do not treat diseased chickens. Commercially available drugs were used by majority (90.0%) of the respondents who also administer the drugs themselves (100%). Disinfection is not practiced by majority

(96.3%) of the respondents but a few (3.70%) disinfect the poultry houses using commercial disinfectants.

Ethnoveterinary practice. Traditional practices are done by most of the respondents (66.7%) by smoking around the houses, hanging/putting plant parts around and/or inside the poultry houses and nests, spreading salt around the house and soaking palay/rice in kerosene then feeding it to diseased chickens. The manner by which dead birds were disposed by the respondents was usually by burying (76.7%) or burning (17.5%) the carcasses.

Utilization of native chickens

Almost all of the respondents (95.4%) slaughter their native chicken for home consumption averaging to 12.35 ± 10.58 heads consumed per year. Respondents consume more growers (cockerels and pullets) averaging to about 7.07 ± 8.98 heads a year than roosters (2.45 ± 4.03 heads/year) and hens (2.98 ± 6.91 heads/year). Hens appear to be more valuable for the raisers because hens are the ones who actually lay eggs, incubate and hatch the eggs and take care of the chicks. Thus, the hens are directly responsible for reproduction. Growers are dispensable since their performances are not yet established.

Production performance

The number of eggs laid per clutch ranges from 6 to 18 with an average of 10.82 ± 1.97 pieces (Table 5). The mean number of eggs hatched per clutch was 8.50 ± 2.12 pieces giving an average hatchability rate of 79.38 ± 13.48%. These findings were similar to the observations of Magpantay (2006) in the production performances of native chickens in Dolores, Quezon. The percent hatchability observed by the raisers in Palawan is around 79.38 ± 13.48 while it is around 60-88% in Camarines Sur (Onate, 1991), 84.2% in Cagayan Valley, 81.4% in Western Visayas and 74.8% in Southern Tagalog (Thanh, 2005), and 83.7% in Iloilo (Cabarles, 2012). The number of chicks weaned ranges between 2 to 12 chicks with an average of 5.68 ± 2.06 chicks. Percent liveability of the chicks hatched up to the age of weaning was 66.89 ± 20.20. The most common causes of chick mortality observed by the respondents were diseases and predation.

Table 5. Production performance of native chicken in Palawan.

Variable	Mean ± SD	Min	Max
Clutch size	10.82 ± 1.97	6	18
Eggs hatched per clutch	8.50 ± 2.12	5	14
Percent hatchability	79.38 ± 13.48	50	100
No. of chicks weaned	5.68 ± 2.06	2	12
Percent liveability	66.89 ± 20.20	33	100

CONCLUSION

In Palawan, native chickens are raised traditionally in the range, usually without shelter but few raisers provide housing made of natural materials. Raisers utilize farm products and by-products readily available in the area and feed these to their flocks twice a day by broadcasting in the ground. Water is provided once a day in improvised drinking trough. Random mating is practiced.

Selection of breeder/replacement stocks is done by using body size and conformation as bases. Raisers take care of the reproductive capability of their chickens by providing adequate number of nests and by placing these anywhere the raisers believe is strategic for the laying of the hens. Natural incubation and brooding is practiced but raisers confine the hens and chicks for a week after hatching to help the hens recover and assure the hardening of the chicks.

Raisers do not practice record keeping. It is recommended that this should be done to monitor inbreeding or genetic dilution and maintain variability among native chickens. This is important in Palawan because it has the Paraoakan genetic group of Philippine native chicken.

Flock health management is usually done with the use of traditional practices that is within reach and affordable to raisers. But, a respondent who improvised technologies such as incubators made of Styrofoam is an indication that raisers will adopt technologies as long as it is within their financial and resource capabilities. Native chickens are raised for home consumption and growers are only sold as the need for petty cash arise.

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