

Study on the Performance of Backyard Poultry Production Reared By Rural Woman in Mahoba

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Paper Received on August 18, 2015, Accepted on October 23, 2015 and Published Online on October 20, 2015

ABSTRACT

A study was conducted during the year 2012 to investigate performance of backyard poultry maintained by woman in rural areas of mahoba. 200 female farmers were selected at random from 10 randomly selected villages of mahoba. Average flock size maintained by a household in rural areas of mahoba was 22.53 ± 9.92 birds with a higher number of chicks 13.92 ± 5.38 than adult birds 9.21 ± 4.54 . Fewer birds were found in flocks given no housing facility 59.36% than those given part time housing facility 17.94%. Higher number of birds/household was found with flock owners vaccinating their chicken against Marek's + ND + Fowl pox than those not vaccinating their chicken against these diseases. On the average 2168 ± 15.62 eggs were obtained by a household. Egg production/bird irrespective of the breed was found to be 127 ± 8.53 eggs. Of the total eggs produced, 873 ± 18.70 eggs were consumed by the household on annual basis. More eggs per bird were produced by Rhode Island Red (RIR) than Desi breeds. Flocks given a part time housing facility and full time housing produced more eggs/bird than those given no housing. Birds given Kitchen leftover, insect, worms, crop residues, grass and grains were mainly used as feed materials, cereal grains, cereal bran, broken grains and other house waste products. As far as water is provided for village chickens at different times of the day: ad-libitum. Eggs and bird are sold from farmer household directly (72.4%) and Almost 27.6% farmers were in selling chicken & eggs in the village market. This study concludes that RIR produced higher number of eggs/bird under scavenging conditions than desi, kadaknath and White Leghorn breeds. Effective health coverage, housing facilities and rearing of highly productive breeds will improve backyard poultry production in rural areas of Mahoba.

Key words: Backyard poultry, Desi birds, Egg production, Flock size and Rural Woman.

Backyard poultry are primarily kept for egg and meat production on a subsistence basis in rural areas of India. Indian poultry industry has made a tremendous growth during the last 4 decades. Globally, India ranked 3rd in egg production (66.45 billions) and 5th in chicken production (3.6 Mt) in the year 2011-12. This increase in poultry production has enhanced the per capita availability to 55 eggs and 2.4 kg poultry meat per annum (*Economic Survey, 2012-13*). India has one of the world largest commercial poultry sector, but a big rural and urban divide in the level of consumption of poultry product. Rapid economic growth and urbanization has resulted in fast expansion of industrial large scale,

vertically integrated, poultry production units. Opportunities have also expanded for small scale poultry enterprises due to improved market access infrastructure and a preference structure that might still favour free range Desi birds and eggs. Market oriented backyard poultry enterprises are being recognized as a stepping stone for the poorest households enabling them to take the first step towards breaking out of the vicious circle of poverty and deprivation. There is also growing evidence to demonstrate the role of back yard poultry in enhancing the food and nutrition security of the poorest households, reducing the livelihood vulnerability and insecurity, and promotion of gender equity (*Dolberg*

2004, Ahuja 2004, Otte 2006). In general in this system the poultry are kept in low-input and low output system managed by women and children of the household (Shinde & Srivastava, 2006, Sethi, 2007) Back yard poultry production is not of economic importance to Mahoba, but in India, the rearing of the semi-intensive and so-called 'local or desi' breed of chickens is considered to be an important source of both food and income to a large number of Indian families. The present study was made to investigate flock size, egg production performance and factors affecting production performance of backyard poultry in mahoba.

METHODOLOGY

The study was conducted during 2012 to investigate flock size and egg production performance of backyard poultry maintained by woman in rural areas of mahoba. Data were collected purposively from 200 female farmers were selected at random from 20 randomly selected villages including Jaitpur, Panwari, Charkhari and Kabrai blocks of the Mohoba district during the 2012 (10 farmers/village). Information regarding flock size, type of chicken, age of the chicken, number of eggs produced and consumed vaccination practice, housing facility, feeding practice and marketing system given to new born chicks was collected. The data were analyzed using (General Linear Model) procedures (Steel and Torrie 1981), univariate and Chi-square tests. The following model was constructed:-

$$Y_{ijkl} = \mu + a_i + b_j + c_k + e_{ijkl}$$

RESULTS AND DISCUSSION

Flock size : The birds are owned mostly by women and children for home consumption, small cash income, social and cultural activities. The flocks were composed of greater numbers of adult birds than chicks (Table 1). Flock size ranges between 5 and 50 birds (Shinde & Srivastava 2006), (Sethi 2007). (Goromela et al. 2006) reported that Flock sizes may vary from an average of 1-10 birds of indigenous poultry per rural household. (Sankhyan et al. 2013) reported that average flock size revealed was 9.4(4.6) which is in line as reported from different study from South East Asia (Kumaresan et al. 2008) and (Dorji et al. 2012), but comparatively lower than those reported by (Abdelqader et al. 2007). The higher flock size in Jaitpur block than in other blocks

could be attributed to greater awareness of the farmers about backyard poultry production. Jaitpur is a more developed area of mahoba with well established Krishi Vigyan Kendra compared with other parts of mahoba. The farmers also have an easy access to the nearby market from where they could easily get highly productive birds and advice on backyard poultry production.

Table 1. Flock and egg production statistics of backyard Poultry in mahoba

Flock and egg production	Mean \pm SE
Total annual household egg production	2168 \pm 15.62
Annual egg production/bird	127 \pm 8.53
Total annual household eggs consumption	873 \pm 18.70
Birds consumed by a household per annum	6.02 \pm 1.61
<i>Flock size</i>	
Chicks	13.32 \pm 5.38
Adult birds	09.21 \pm 4.54
Total	22.53 \pm 9.92

Table 2 Farmers keeping various type of poultry under backyard conditions in mahoba

Breeds	(%)
Desi	47.5
Kadakhnath	22.7
RIR	10.3
WLH	6.6
Others	12.9

Breeds: The flocks were found to possess higher numbers of desi than other improved variety of bird. Numbers of kadakhnath chicken in a flock were also higher than WLH, RIR and others. Amongst the farmers, higher proportions were rearing desi chicken and smaller proportions were rearing WLH chicken. The proportion of farmers rearing kadakhnath chicken was also higher than those rearing others breeds and RIR (Table 2). The smaller number of highly productive exotic chicken like RIR and WLH and higher proportion of the farmers rearing desi or kadakhnath chicken could probably be due to the higher mortality and high cost of chicks in exotic chicken (RIR and WLH) in the study area. The RIR and WLH chicken are more prone to adverse conditions than local and kadakhnath chicken and therefore, the majority of the farmers would have tried to avoid rearing these chickens.

Housing management: Housing facility had a significant effect on household flock size.

Lower numbers of chickens were found in flocks given no housing facility than those given part time housing facility (Table 3). The small number of chickens in flocks with no housing facility could be attributed to higher death losses due to stressful conditions or many effected diseases. (Naila *et al.* 2001) also reported higher death rates in flocks with no housing facilities in Charsadda.

Vaccination: A higher number of birds/household was found with flock owners vaccinating their birds against Marek's + ND + Fowl pox than those not vaccinating their chicken against diseases (Table 3). Higher flock size has also been reported for flock owners vaccinating their flocks (Naila *et al.* 2001) than in non vaccinated flocks. The higher number of chicken in flocks vaccinated against Marek's + ND + Fowl pox could probably be due to better immunity development of the chicken ensuring survivability of more chickens.

Table 3 Comparison of flock size and egg production performance of backyard poultry in mahoba

Activities	Flock size	Per bird egg production
<i>Breeds</i>		
Desi	12.53a \pm 2.42	83e \pm 7.48
Kadaknath	10.62b \pm 3.57	126c \pm 6.82
RIR	8.13d \pm 5.92	161a \pm 8.64
WLH	7.24e \pm 3.18	138b \pm 9.83
Others	9.46c \pm 1.77	114d \pm 4.96
<i>Vaccination</i>		
No vaccination	42.65a %	96d \pm 7.09
Vaccination		26.81b %
109c \pm 3.14		
onset of disease		
Vaccination against	19.46c %	128b \pm 5.73
marek's only		
Vaccination against	11.08d %	156a \pm 9.85
Marek's, ND and Fowl pox		
<i>Housing facilities</i>		
None	17.94c %	92c \pm 4.71
Part time (only night)	59.36a %	164a \pm 2.62
Full time	22.70b %	141b \pm 6.43

Egg production and consumption status of a household: A domestic fowl hen produces between 80 and 160 eggs par year (Sonaiya 1990, Gueye 2003). Jaitpur and Panwari are the two adjacent blocks and almost similar production is expected; however, the higher annual household egg production and consumption in Jaitpur than in Panwari could be attributed to

awareness of the farmers about backyard poultry production and readily available market for eggs and birds. A higher number of eggs/bird was produced by RIR than by Desi breeds birds (Table 3). The higher egg production of exotic chicken than desi chicken could be attributed to their better genetic potential for higher egg production. Similar results were found to (Roberts 1999). In fact desi is a non-descript indigenous breeds and so far no efforts have been made to do selective breeding for improving its egg production performance. Flocks given a part time (only night) housing facility produced higher number of eggs/bird than those given no housing facility (Table 3). (Sankhyan *et al.* 2013) reported that Local chickens were reared predominately under free range scavenging system. During the day time bird freely scavenge in the area around the household and at night is provided a shelter in most of the cases (97.19%). The findings were similar to (Mandal *et al.* 2006). Flocks reared in normal full time housing (intensive system) also produced a higher number of eggs/bird than those given no housing facility. The poor egg production performance of birds with no housing facility suggested exposure of birds to adverse conditions. Such birds were usually spending their nights on trees or other sources where they had no appropriate protection from rain, summer and other hazards. A higher number of eggs/bird was obtained from flocks vaccinated against Marek's + ND + Fowl pox disease than those not vaccinated (Table 3).

Feeding management: In mahoba, back yard chickens represent a significant component of the rural household livelihood as a source of cash income and nutrition. Birds scavenge in the vicinity of the homestead during daytime where they may be given Kitchen leftover, insect, worms, crop residues, grass and grains were mainly used as feed materials, although most of the farmers provided the supplementary feed (cereal grains, cereal bran, broken grains and other house waste products), but the amount is unknown and variable in most cases. Millets was the most common supplement, followed by wheat, whereas very few used commercial feed. As far as water is concern, there is free access to it but the quality was poor due to unhygienic drinkers and unreliable water sources. The findings were similar to (Mandal *et al.* 2006). From all the study areas it was observed that provided water for back yard poultry at different times of the day: ad-libitum from well, pond

Table 4. Marketing characteristics of local chicken and eggs of mahoba

Marketing birds and eggs	%
Directly from household	72.4
Village market	27.6

Table 5. Constraints faced by farmers

Constraints	Rank %					
	1st	2nd	3rd	4th	5th	6th
Predators	35	23	14	12	9	7
Diseases	21	27	23	11	10	8
Health service	9	13	26	15	17	20
Finance	4	6	14	20	24	32
Improved breed	10	8	17	28	23	14
Marketing	21	23	6	14	17	19

water, matka, handpump and other sources. These results are in agreement with (Mekonnen 2007).

Marketing system : Study of marketing system in mahoba (Table 4) indicated that marketing system was simple and direct and in some cases involved the middle men. The study revealed that substantial amount of eggs produced was used for family self consumption, which serves as very good protein source. Particularly in winter season when temperature and production is increases. Good amount of eggs and bird are sold from farmer household directly (72.4%), they fetch higher prices. Almost 27.6% farmers there were in selling chicken & eggs in the village market, attributed to the consumer preference for local chicken and eggs because of better flavour and deep coloured yolk. Generally farmers do not sell their female birds for meat. Only males were sold, these birds can be sold at very high prices, almost two to three times than the normal chicken rate.

Constraint : The major constraints shown in Table 5 were those related with predators particularly dogs, newla and cats, since under extensive system of management and mainly during scavenging birds became vulnerable to predator, particularly chickens and growers. Other constrains are diseases, lack of health services, finance problem and improved breeds. According to farmers, the marketing of eggs and chicken is not considered a problem, since the consumer has predilection towards backyard poultry and are even ready to pay higher prices, due to the prevalent belief in society about the nutritive value of this type of eggs.

CONCLUSION

Back yard poultry farming is the cornerstone of poultry farming in the district but its growth is limited due to high seasonal mortality, low productivity and suboptimal management. The current improvement strategies adopted has shown promising result but needs to be strengthened. Flocks vaccinated against Marek's, Newcastle disease and fowl pox diseases performed better than others. Similarly, flocks given a part time housing facility produced higher number of eggs/bird than those given no housing facility. Improved variety and crosses of local birds with superior germplasm are well adapted to local agro-climatic condition and they must be incorporated in the farming system. Rhode Island Red birds produced higher number of eggs/ bird than White Leg Horns, kadaknath and desi chicken. Effective extension message addressing suboptimal management must be incorporated in strategies for improvement in back yard poultry farming. Provide loan facility by governments.

REFERENCES

- Abdelqader A, Wollny C B A and Gauly M (2007). "Characterization of local Chicken production system and their potential under different levels of management practice in Jordan". *Tropical Animal Health and Production* 39, pp 155-164.
- Ahuja, V. (2004). "Livestock and Livelihoods: Challenges and Opportunities for Asia in the Emerging Market Environment", NDDDB, India and Pro-Poor Livestock Policy Facility (South Asia Hub) of FAO.
- Dolberg, F.(2004). "Review of Household Poultry Production as a Tool in Poverty Reduction with Focus on Bangladesh and India". India and Pro-Poor Livestock Policy Facility (South Asia Hub) of FAO.
- Dorji N and Gyeltshen T (2012). "Characterization of family poultry production in Haa and Mongar districts of Bhutan". *Livestock Research for Rural Development*. 24, Article 155.
- GOI, (2013) Economic Survey 2012-2013, Economic Division, Ministry of Finance, New Delhi

- Goromela E.H., Kwakkel, R.P., Verstegen, M.W.A. and A.M. Katule, A.M. (2006). "Strategies to optimize the use of scavenge able feed resource base by smallholders in traditional poultry production systems in Africa: A review", *African Journal of Agricultural Research* 1 (3), pp. 91-100.
- Gueye EF. (2003). "Gender issues in family poultry production systems in low income food deficit countries". *Am. J. Alternat. Agric.* 18: (4) 185-195.
- Kumaresan A, Bujarbaruah M K, Pathak K A, Cheetri B, Ahmed S K and Haunshi S (2008). "Analysis of a village chicken production system and performance of improved dual purpose chickens under a subtropical hill agro-ecosystem in India". *Tropical Animal Health Production.* 40:395-402.
- Mandal M K, Khandekar N and Khandekar P. (2006). "Backyard poultry farming in Barilly district of Uttar Pradesh, India": An analysis. *LRRD.* 18, Article 101
- Mekonnen G, (2007). "Characterization of the small holder poultry production and marketing system of dale", Wonsho and Loka Abaya Weredas of SNNPs. MSc Thesis. Hawassa University.
- Naila C, Farooq M, Durrani F R, Asghar A and Pervez (2001). "Prevalence and economic ramification of Newcastle Disease in Backyard chicken in Charsadda". *Online J. Bio. Sci.* 1(5):421-424.
- Otte, J. (2006). "The Hen Which Lays the Golden Eggs: Why Backyard Poultry are so popular?" PPLPI Feature
- Roberts, JA. (1999). "Utilization of Poultry Feed Resources by Smallholders in the Villages of Developing Countries", *Poultry as a Tool in poverty Eradication and Promotion of Gender Equality Proceedings of a Workshop.*
- Sankhyan V, Katoch S, Thakur Y P, Dinesh K, Patial S and Bhardwaj N. (2013). "Analysis of characteristics and improvement strategies of rural poultry farming in north western Himalayan state of Himachal Pradesh, India", *LRRD Newsletter* 25 (12).
- Sethi, B. (2007). "Backyard Poultry in Orissa", *Orissa Review* January pp. 48-52
- Shinde, P.K. and Srivastava, N. (2006). "Adaptive Research Interventions on Household Poultry: Lessons Learned and Feedback for Further Research". In: Sasidhar, P.V.K. (Ed.). *Poultry Research Priorities to 2020, Proceedings of National Seminar, November 2-3, 2006. CARI, Izzatnagar.* pp. 239-243.
- Sonaiya, EB (1990). "The context and prospects for development of smallholder rural poultry production in Africa". *CTA seminar proceedings, Smallholder Rural Poult. Prod.* 1: 35-60.
- Steel R G D and Torrie J H (1981). "Principles and procedures of statistics; A biometrical approach". 2nd. Ed. McGraw-Hill, Singapore.

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