

Distribution of Poultry Farmers in Different Farming Systems

DEBASISH SAHA, N. KHANDEKAR, R. K. GHOSH¹ AND A. GOSWAMI¹

*Division of Extension Education, Indian Veterinary Research Institute
 Izatnagar, Bareilly 243122, UP, India*

¹*Department of Veterinary & Animal Husbandry Extension Education
 W. B.U.A.F. S, Kolkata 700037, India*

Abstract

The study was conducted in North 24 Parganas district of West Bengal, India. Two blocks were purposively selected from the district having high poultry population from the two zones (i.e. non-saline and saline zones). From each zone two clusters with three villages each, based on proximity were selected randomly on proportionate basis to form a total sample size of 150 respondents. A structured interview schedule was prepared, pretested and administered personally for the purpose of data collection. Data were computed and analyzed statistically. It was observed that the poultry rearing practices in backyard system was done mostly in a small kaccha house under the scavenging system with little supplementary feed. In the semi-intensive and intensive system scientific poultry rearing practices including housing and feeding were followed. The productivity of birds was found to be higher in the intensive system as compared to the semi-intensive and backyard system. Majority of respondents received training about poultry farming in intensive broiler farming, whereas majority of respondents used scientific housing arrangement in their farm in intensive and semi-intensive poultry rearing.

Key words : Poultry rearing, Backyard, Intensive and semi-intensive system.

The increase in world population projected over the next 50 years will affect food production and delivery system. Currently, about 800 million people are undernourished to various degree, most of them living in under developed countries in Africa and Asia (1). Protein hunger is a common occurrence in

infants and particularly in India child malnutrition (63%) is alarming (2). Poultry therefore, in this scenario plays a wonderful role to fight against nutritional insecurity. Poultry production in India has reached a distinct and spectacular growth in last 40 years. This sector is playing a vital role in augmenting income of the weaker sections besides providing nutritious and delicious food through egg and meat to the people. Today India ranks fourth in egg production and 22nd in broiler production in the world (3). Unfortunately, the growth of the sector is mainly confined in few pockets of India. The ICMR recom-

Table 1. Distribution of respondents according to their duration of poultry rearing. N=150. Figures in parentheses indicate percentage.

Cate- go- ries	Intensive		Semi- inten- sive		Back- yard	Total
	Broi- ler	Lay- er				
Duration (Yr)						
<2	16(34.1)	-	2 (28.5)	17(17.7)	35	(24)
2—4	15(31.9)	1 (2.1)	1 (14.3)	17(17.7)	34	(22)
4—6	9 (19.1)	-	1 (14.3)	23(24)	33	(22)
>6	6 (12.8)	-	3 (42.9)	39(40.6)	48	(32)
Total	47 (100)		7 (100)	96(100)	150	(100)
Training Received in Poultry						
Yes	36(76.6)	1 (2.1)	1 (14.3)	-	38	(25.4)
No	10(21.3)	-	6 (85.7)	96(100)	112	(74.6)
Total	47 (100)		7 (100)	96(100)	150	(100)

Table 2. Distribution of respondents according to their average flock size under intensive system. N=47. Figures in parentheses indicate percentage.

Flock size (birds)	Intensive	
	Broiler	Layer
Upto 500	26 (54.4)	1 (2.1)
500—1000	8 (17)	-
1000—1500	6 (12.8)	-
1500—2000	2 (4.2)	-
> 2000	4 (8.5)	-
Total	47 (100)	

Table 3. Distribution of respondents according to their average flock size under semi-intensive and backyard system. N=103. Figures in parentheses indicate percentage.

Flock size (birds)	Semi-intensive	Backyard
Upto 5	-	43 (44.8)
6—10	-	34 (35.4)
11—15	-	13 (13.5)
16—20	6 (85.7)	4 (4.2)
Above 20	1 (14.3)	2 (2.1)
Total	7 (100)	96 (100)

mends 180 eggs and 11 kg of poultry meat per capita per year. But the per capita availability of eggs and poultry meat is 40 eggs and 900 g meat per head per year, respectively which is far below the recommended levels. The poultry farming is possible in widely different agro-climatic environment as the fowl have remarkable physiological adaptability. Requirement of small space, low capital investment, quick return and well distributed turnover throughout the year make poultry farming remunerative in both rural and urban areas. Thus, rural poultry production system has a vast scope. There is hardly any systematic data on rural poultry production. With the increasing emphasis on small animals, we need first to have empirical data to develop strategies particularly for the weaker section of community. Keeping this in mind the present study was made to find out the existing status of rural poultry production in North 24 Parganas district of West Bengal.

Methods

The study was conducted in North 24 Parganas district of West Bengal, India. Two blocks were purposively selected from the district having high poultry population from the two zones (i.e. non-saline and saline zones). From each zone two clusters with three villages each, based on proximity were selected randomly on proportionate basis to form a total sample size of 150 respondents. A structured interview schedule was prepared, pretested and administered personally for the purpose of data collection. The data collection was taken up during January to March 2003. Data generated were computed and analyzed through different statistical tools viz. frequency distribution, percentage analysis.

Table 4. Distribution of respondents according to space provided per bird. N=54. Figures in parentheses indicate percentage.

Space/ bird (sq ft)	Intensive			Semi-intensive		Total
	Chi-cks	Broi-ler	La-yer	Ch-ick	Ad-ult	
<0.5	47 (100)	-	-	7 (100)	-	54 (100)
0.5–1	-	20 (42.5)	-	-	-	20 (37)
1.1–1.5	-	26 (55.4)	-	-	2 (28.6)	28 (51.9)
1.5–2.0	-	-	1 (2.1)	-	5 (71.4)	6 (11.1)

Results and Discussion

Duration in Poultry Farming

Table 1 shows that majority of the intensive poultry farmers i.e. 68.1% were rearing poultry for less than 4 years while 31.9% had 4—6 or more than 6 years of experience. On the other hand, majority of semi-intensive (57.2%) and backyard (64.6%) poultry farmers had more than 4 years of experience in farming and the rest below 4 years.

Training in Poultry

Majority (78.7%) of the poultry farmers under intensive and 14.3% under semi-intensive system received training in poultry, whereas none of the farmers under the backyard system received any formal training (Table 1).

Flock Size

The prevalent breeds in the backyard were non-descript desi birds, on the other hand in the intensive system only white broiler and Rhode Island Red were reared and broilers in the semi-intensive system. Under the intensive system majority (54.4%) of the broiler farmers kept upto 500 birds, followed by farmers having 500—1000 birds (17%), 1000—1500 birds (12.8%), 1500—2000 birds (4.2%) and above 2000 birds (8.5%) (Table 2). The layer farmers kept upto 500 birds on an average. On the other hand, majority (85.79%) of the semi-intensive poultry farmers kept

Table 5. Distribution of respondents according to the height of poultry house from ground level. N=54. Figures in parentheses indicate percentage.

	Broiler	Intensive Layer	Semi- intensive	Total
Height (ft)				
0—1.0	1 (2.1)	-	2 (28.5)	3 (5.5)
1.0—2.0	20 (42.6)	1 (2.1)	2 (28.5)	23 (42.6)
2.0—3.0	21 (44.7)	-	2 (28.5)	23 (42.6)
Above 3	4 (8.5)	-	1 (14.5)	5 (9.3)
Total		47 (100)	7 (100)	54 (100)
Materials Used in Poultry House				
Wall : Brick + net	35 (74.5)	-	2 (28.6)	37 (68.5)
Bamboo net	11 (23.4)	1 (2.1)	5 (71.4)	17 (31.5)
Floor : Brick with cement	19 (40.4)	-	-	19 (35.2)
Mud	27 (57.5)	1 (2.1)	7 (100)	35 (64.8)
Roof : Tiles	38 (80.9)	1 (2.1)	6 (85.7)	45 (83.3)
Concrete	2 (4.2)	-	-	2 (3.7)
Straw	6 (12.8)	-	1 (14.3)	7 (13)
Litter Material : Saw dust	44 (93.7)	-	-	44 (81.5)
Small pieces of straw	2 (4.2)	1 (2.1)	7 (100)	10 (18.5)
Types of Material Used for Feeder and Waterer				
Waterer : Earthen pots with metallic tray	32 (68.1)	1 (2.1)	7 (100)	40 (74.1)
Plastic	14 (29.8)	-	-	14 (25.9)
Feeder : Earthen	-	1 (2.1)	-	1 (1.8)
Plastic	17 (36.2)	-	-	17 (31.5)
Metallic	29 (61.7)	-	7 (100)	36 (66.7)
Types of Arrangement Made in Poultry House				
Chick guard	46 (97.9)	1 (2.1)	-	47 (87.3)
Maintenance of temperature	46 (97.9)	1 (2.1)	-	47 (87.3)
Litter change	46 (97.9)	1 (2.1)	7 (100)	54 (100)
Room disinfected	46 (97.9)	1 (2.1)	7 (100)	54 (100)
Clean equipment	46 (97.9)	1 (2.1)	7 (100)	54 (100)
Electricity supply	35 (74.5)	1 (2.1)	5 (71.4)	40 (74.1)
Trees planted around house	21 (44.6)	-	4 (57.1)	25 (46.3)
Brooder house situated away from adult birds	18 (38.3)	1 (2.1)	-	19 (35.2)
Farm connected with road	31 (66)	1 (2.1)	7 (100)	39 (72.2)
Farm in less crowded place	37 (78.7)	1 (2.1)	5 (71.4)	43 (79.6)
White wash	32 (68.1)	-	-	32 (59.3)
Duration : Once a yr	4 (8.5)	-	-	4 (7.5)
Twice a yr	19 (40.4)	-	-	19 (35.2)
Thrice a yr	9 (19.2)	-	-	9 (16.6)
Artificial light : 5—6 h	19 (40.4)	1 (2.1)	-	20 (37.3)
> 7 h	27 (57.5)	-	-	27 (50.0)

16—20 birds and the rest (14.3%) above 20 birds. Under the backyard system of poultry the respondents (44.8%) generally kept upto 5 birds, whereas 35.5, 13.5, 4.2 and 2.1% of respondents kept 6—10, 11—15, 16—20 and above 20 birds, respectively

(Table 3). The average flock size, however, in the intensive, semi-intensive and backyard system was 14.49, 4.2 and 16.9 birds, respectively.

Housing

Backyard System. In the system respondents

Table 6. Distribution of respondents according to supplementary feed ingredients given by backyard poultry owners. N=96. Figures in parentheses indicate percentage.

Ingredient	Percentage given
Rice broken rice	96 (100)
Boiled rice	86 (89.6)
Broken wheat	38 (39.5)
Kitchen waste	96 (100)
Readymade ration purchased from market (rarely)	27 (28.1)

generally made small houses with locally available materials viz. bamboo, mud, wood, net, jute stalk, tiles, tin and straw. Generally, the adult birds were housed together during the night with little consideration of space available per bird. Chicks were kept separately to avoid huddling and consequent death. Although, birds were left in free range during day time, however, some respondents housed the birds in the poultry houses or bamboo baskets in the afternoon to avoid disputes with neighbors and attack of predators.

Metallic, plastic or earthen feeders and water-pots were provided by few respondents. The poultry houses were constructed at different heights from the ground to prevent the attack from predators.

Intensive and Semi-Intensive Type of Houses. Mixed farming was prevalent among intensive and semi-intensive poultry farmers. Under the intensive system nearly 98% of respondents were rearing broiler whereas, only 2% kept layer birds. All the respondents keeping birds under the semi-intensive system were rearing dual purpose birds. Integrated fish, duck and chicken farming was also found among the semi-intensive farmers. The details about the housing are studied and discussed below.

Space. All the respondents under the intensive system provided upto 0.5 sq ft space per chicks. In

Table 7. Distribution of respondents according to frequency of feeding of birds. N=54. Figures in parentheses indicate percentage.

Frequency (times)	Intensive		Semi-intensive	Total
	Broiler	Layer		
2	20 (42.6)	-	6 (85.7)	21 (38.8)
3	26 (55.3)	1 (2.1)	1 (14.3)	33 (61.2)
Total	47 (100)		7 (100)	54 (100)

Table 8. Distribution of respondents according to amount of feed provided. N=54. Figures in parentheses indicate percentage.

Feed/day (g)	Intensive		Semi-intensive
	Broiler	Layer	
80—90	2 (4.5)	-	7 (100)
90—100	8 (17)	-	-
100—110	22 (46.7)	-	-
110—120	14 (29.7)	-	-
120—130	-	1 (2.1)	-
Given feed supplement	36 (78.2)	1 (2.1)	4 (57.1)

broiler bird, the growers were provided 0.5 to 1.0 sq ft (42.5%) and 1.1 to 1.5 sq ft (55.4%) space, whereas 2.1% layer farmers provided 1.5 to 2 sq ft space per bird. Under the semi-intensive system all the respondent provided up to 0.5 sq ft space for chicks, whereas, 28.6 and 71.4% provided 1.1 to 1.5 and 1.5 to 2.0 sq ft space, respectively (Table 4) (1 ft = 0.3048 m).

Height from Ground Level. Table 5 shows that majority (85.2%) of the respondents had the poultry house, 1 to 2 ft and 2 to 3 ft from ground level. An equal number of respondents (44.7%) rearing birds under intensive system of the poultry had the sheds at about 1 to 2 ft and 2 to 3 ft and only 8.5% respondents made the house above 3 ft height from ground level. Similarly, 28.5% each of the semi-intensive poultry farmers had the house at less than 1, 1 to 2 and 2 to 3 ft respectively.

Housing Material. The respondents made use of locally available and conventional materials under the intensive system. The walls were made of either brick and net or bamboo net in the intensive (74.5 and 25.5%, respectively), and in semi-intensive (28.6 and 71.4%, respectively) system. The majority of the respondents (83% intensive and 85.7% semi-intensive) used tiles as a roofing material. Straw was used by only 12.8% of intensive and 14.3% semi-intensive

Table 9. Distribution of respondents according to source of drinking water. N=54. Figures in parentheses indicate percentage.

Source	Intensive		Semi-intensive
	Broiler	Layer	
Hand-pump	46 (97.9)	1 (2.1)	7 (100)
Tap	7 (14.8)	-	-

poultry farmers. A mere 4.2% intensive farmer had concrete roofs. Generally, the flooring was of mud (59.6% intensive and 100% semi-intensive) followed by 40.4% intensive farmers having a flooring of brick filled with cement. In the intensive system sawdust was popularly used by the poultry farmer (93.7%) as a flooring material. However, all the semi-intensive farmers and rest of the intensive farmer used small pieces of straw as the litter material.

In the intensive and semi-intensive system the space provided per birds was appropriate. The flooring was generally made of mud, which could lead to high moisture content in the litter and consequently, breeding of diseases. Roofs were generally made of a tile which is in consonance with the finding of Mishra et al. (4).

Materials for Feeders and Waterers. About 70.2% of intensive and the entire semi-intensive poultry farmers used earthen pots with metallic tray and only 29.8% of intensive farmers made use of plastic waterers. With regards to feeders majority (61.7% intensive and 100% semi-intensive) of farmers used indigenous metallic feeders, whereas, 36.2 and 2.1% of respondents used plastic and earthen feeder, respectively.

Arrangement of Poultry House. All the intensive and semi-intensive poultry farmers changed the litter, disinfected the room and cleaned equipment in the poultry house. Majority (76.6%) of intensive and 71.4% of semi-intensive poultry farmer had an electric supply in their farms. Sixty-eight percent and 100% had their farm well connected with brick road, 44.6 and 57.1% planted trees around poultry house. Eight-one percent and 71.4% of the farms were located in less crowded place, under the intensive and semi-intensive system, respectively. Entire intensive poultry farmers had chick guard and maintained the temperature in the poultry house. Sixty-eight percent intensive farmers white washed their farms. Among the respondents who white washed their sheds were generally found to do it, 1, 2 or 3 times a year i.e. 8.5, 40.4 and 19.2%, respectively. Under intensive system 40.4% of farmers had the brooder house situated away from the adult birds and 42.5 and 57.5% provided 5 to 6 h and more than 7 hartificial light, respectively. The semi-intensive farmer did not make these arrangements at their farm.

Fifty percent of the farmers were generally keep-

ing less than 500 birds in intensive system, however, farms with more than 2,000 birds were also found in the area of the study. Under the backyard and semi-intensive system the average flock size was found to be 42 and 16.9, which was similar to the findings of Dana (5) and higher than those reported by Panda and Nanda (6) who concluded that the average flock size was 10.29 birds in Orissa. The higher productivity breeds were kept in intensive and semi-intensive system, however, in the backyard system non-descript breeds were found. The improved indigenous breeds need to be introduced to reap more benefits.

Feeding

Seventy percent of the expenditure in poultry rearing accounts for the feed cost.

Backyard System. Under the backyard system of poultry farming the practice prevalent in the rural areas is of leaving the birds for scavenging in the morning and giving a handful of grain during the day time. Some supplementary feed offered in the night shelter too. The birds generally scavenge on insects, worms, grasses, seeds and flowers, which are locally available. Table 6 shows the distribution of respondents according to the supplementary feed ingredients given. All the respondents offered rice/broken rice and kitchen waste to the birds, 89.6% of respondents give boiled rice as supplementary feed and 39.5% gave broken wheat to the birds. 28.1% of respondents sometimes purchased ready made ration from the market for feeding the birds kept in the backyard system. The source of drinking water was the open drains around hand pump and some time fresh water was provided in waterers.

Intensive and Semi-Intensive System. The layer farmer and semi-intensive respondents gave different types of ration to different age group of birds i.e. starter, grower and layer ration to birds. The broiler farmers also gave starter ration between 1 to 5 weeks and there after provided with finisher ration.

Frequency of Feeding. Table 7 reveals that majority of the intensive (57.4%) and semi-intensive (14.3%) farmers feed their birds 3 times a day, the rest feed the birds twice a day. The semi-intensive farmers generally left the birds for scavenging in the morning and evening and gave feed on return so that they could makeup for the deficient amount.

Amount of Feed. Table 8 shows that the amount of feed given varied from 80—90, 90—100, 100—110 and 110—120 g, for the broiler farmers i.e. 4.5, 17, 46.7, and 29.7%, respectively, while the layer farmer gave an amount of 120 to 130 g of feed. The entire respondents under semi-intensive system gave 80—90 g of feed only, since they left the birds to scavenge also. Further, 80.3% of intensive and 57.1% of semi-intensive farmers gave feed supplement to their birds.

Source of Drinking Water. All the intensive and semi-intensive poultry farmers used water from hand pumps ; 14.8% respondents under intensive system also used tap water (Table 9). In the backyard system birds were left in free range in the day time with some supplementary feeding as also reported earlier (5, 7—9). However, in the intensive and semi-intensive system scientific feeding practices were followed, which show that the farmers were well acquainted with the feeding regime and realized the importance of proper feeding for better productivity of birds.

Conclusion

Regarding the poultry rearing practices the respondent in backyard system reared poultry in a small kaccha house, under the scavenging system with little supplementary feed. In the semi-intensive and intensive system scientific poultry rearing practices housing and feeding were followed. The productivity of birds was found to be higher in the intensive system as compared to the semi-intensive and backyard system. Majority of respondents received

training about poultry farming in intensive broiler farming, whereas majority of respondents used scientific housing arrangement in their farm in intensive and semi-intensive poultry rearing.

References

1. World Bank. 1996. World resources (1996-97). A guide to the global environment the urban environment. Oxford Univ. Press, New York, USA.
2. Deshai A. J. 1998. Small-scale poultry production. Sci. Proc. 2nd Pan Commonw. Vet. Conf., 1998, Bangalore, India.
3. Singh D. P. 2000. Thrills and challenges for backyard poultry production. Proc. recent advances in rural poultry farming, 7—16 Oct, CARI, Izatnagar, India.
4. Mishra S. P., B. P. Mohapatra, P. K. Dehuri and P. K. Mishra. 2000. A study on the present status of poultry farming in Orissa. 20th Ann. Conf. and Symp. of Indian Poul. Sci. Assoc. on challenges to poultry industry in the new millennium, 12—14 Oct, Chennai, India, pp. 167.
5. Dana S. S. 1998. Animal husbandry practices among Santal and Lodha tribes of Medinipur district of West Bengal. Doctoral thesis, IVRI, Izatnagar, India.
6. Panda B. K. and S. K. Nanda. 2000. Women employment in village chicken production and strategies for its improvement. Poul. Punch 16 : 42—47.
7. Singh D. P. and D. C. Johari. 1990. Kadaknath the native fowl needs to be conserved. Indian Fmg. Mar 1990 : 29—32.
8. Dipeolu M. A., D. Erubetine and T. J. Williams. 1996. Indigenous chicken rearing under village conditions. Int. J. Anim. Sci. 11 : 63—67.
9. Rangnekar D. and S. Rangnekar. 1996. Traditional poultry production system—A need for fresh look from rural development perspective. 20th World's Poul. Cong., 2—5 Sep, New Delhi, India, pp. 405—408.