

## Original Research Article

# Broiler Management and Feeding Practices Adopted by the Farmers of Bihar

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## ABSTRACT

A field survey comprising of 200 broiler farms was conducted to study the broiler farming practices adopted by the farmers of Bihar. A total number of five (5) districts of Bihar were selected consisting of 40 broiler farms from each district. From the study, it was found that large percentage of the respondents were of 40 to 50 years age groups (58.50%) having intermediate education (63.50%). Majority of broiler farms were located in rural areas (74.50) and away from the human dwelling (53.50%). Results also revealed that 69.50 per cent broiler farms had the orientation of buildings in east-west direction on long axis. Most of the respondents had asbestos roof (66.50%). Majority of respondents (87.50%) were used all-in-all-out system of rearing and adopted deep litter system of rearing of birds using rice husk as litter material. Most of the respondents (61.00%) were using pellet form of feed for feeding of their broiler birds and 64.00 per cent of respondents were using water of bore-well for drinking of their birds. Feed conversion efficiency of 1.8-2.0 was reported by 59.50 per cent respondents at their farms. From the study, it can be concluded that the respondents are not aware about the scientific housing system of broilers and are using flexible housing patterns for protecting the birds during inclement of weathers. The farmers are reasonably following the management of broilers according to available local resources.

### Keywords

Broiler farming, Bihar, Location, Orientation, Roof, Pellet, Feed conversion efficiency

## Introduction

In the livestock sector, poultry is the most efficient enterprise for increasing the supply of desired proteins, fats and vitamins in a short period. The poultry sector in India has undergone major shift in structure and operation during last two decades transforming from a mere backyard activity into a major commercial activity with presence of large integrated players with successful implementation of commercial poultry farming on a large scale. This transformation involved sizeable investments in breeding, hatching, rearing

and processing activities. Farmers in India have moved from rearing indigenous birds in the past to rearing hybrids such as is Hyaline, Shaver, Babcock, Ross etc. which ensure faster growth of chicks, low mortality rates, excellent feed conversion and sustainable profits to the poultry farmers.

Poultry farming assumes special significance in the state of Bihar due to integration of poultry sector and available land area. The productivity and production of food grains, particularly of cereals in

Bihar have already reached a point of saturation with little scope to increase, resulting in looking for subsidiary occupations like poultry farming. At the same time, due to limited scope of further addition to the net area sown and huge indebtedness, diversification of agriculture through allied activities like poultry farming has acquired added significance for solving the agrarian crisis of the state. Adoption of broiler farming by farmers will not only liberate them from the debt trap but would also meet the growing demand of poultry meat.

### **Materials and Methods**

A field survey comprising of 200 broiler farms was conducted to study the broiler farming practices adopted by the farmers of Bihar. A total number of five (5) districts of Bihar were selected consisting of 40 broiler farms from each district. The selected districts were Aurangabad, Muzaffarpur, Patna, Purnea and Siwan. From each district, four (4) blocks were selected. A multistage stratified random sampling procedure was applied to select the broiler farms for the whole Bihar. For study, a questionnaire was developed and pre-tested randomly at some broiler farms and the interview schedule for data collection was developed covering the production and management practices followed by the farmers. Personal interview, direct observation were used to collect data from the respondents regarding general management and feeding practices adopted. The collected data were compiled, tabulated and analyzed by using standard statistical procedures (Snedecor and Cochran, 1994) and meaningful inference and conclusions were drawn out.

### **Results and Discussion**

The perusal of the results revealed that majority of broiler farms were located in

rural areas (74.50%) and only 25.50 per cent broiler farms were located in urban areas of Bihar (Table-1). In respect of place of location of broiler farms, most of the broiler farms were placed away from the human dwelling (53.50%). However, 45.00 per cent broiler farms were situated near the human dwelling and only 1.50 per cent of broiler farms were situated within human dwelling. Majority of the poultry farms were connected to road (58.00%) and remaining 42.00 per cent farms had not connectivity with roads. Most of the broiler farms had the orientation of buildings in East-West direction on long axis (69.50%) and the remaining 30.50 per cent farms had the orientation of building in North-South direction. The results also revealed that 59.50 per cent broiler farms had cemented floor in sheds followed by 29.50 per cent earthen and 11.00 per cent brick paved floor in the sheds. Sixty one per cent broiler farms were given floor space of 1.2-1.4 square feet per bird and 37.50 per cent farms were given floor space of 1.4-1.8 square feet per bird followed by 1.50 per cent farms with 1.6-1.8 square feet per bird.

Regarding the types of roof of sheds, it was observed that 66.50 per cent respondents had asbestos roof followed by iron sheet (18.00%), thatched (15.00%) and tiled (0.50%); respectively. Most of the respondents had open sided broiler shed (58.50%) followed by closed sided walls with windows only (41.50%) in the broiler shed. However, only 55.00 per cent farms had overhangs present on walls or windows to protect the birds from rain and direct sunlight. But 45.00 per cent farms had no overhangs on the walls or windows. The results showed that 41.50 per cent farms had the distance of 15 meters between two sheds followed by 20 meters (28.50%), 10 meters (20.00%) and 5 meters (10.00%). Islam *et al.*, (2014) observed that 85 per cent farms had broiler houses with gable type roof of

corrugated iron sheet. Hedge and Shridhar (2012) reported that majority of the farms (74.07%) were located within 50 m from the nearest human dwelling using deep litter system for rearing of broilers and used tiled roof for housing of birds in Tamil Nadu. All farms were well connected with good roads for transport. Farm orientation was towards East-West direction. The floor was mud floor and tiled roof in majority of the farms. All farms were open sided. Sathees Kumar *et al.*, (2013) observed that thatched roof type, cement flooring and deep litter rearing were the practices adopted in most of the native chicken farms under intensive system in Tamil Nadu.

### **Management practices**

The results revealed that majority of respondents (87.50%) used all-in-all-out system of rearing whereas 12.50 per cent respondents were using multi-batch system of rearing (Table 2). Hedge and Shridhar (2012) reported that all-in-all-out system of rearing was practiced. As the methods of rearing of birds are concerned, all the respondents (100%) adopted deep litter system of rearing of birds. Forty nine per cent of respondents had the size of batch of 500-1000 birds per batch. Whereas, 29.00 per cent of respondents had the size of the batch of 1000-5000 birds per batch followed by 22.00 per cent of respondents were having the size of batch of 1500- 2000 birds per batch. Bano *et al.*, (2011) reported that the average flock size in the study area was 4033 birds. Yusuf and Malomo (2007) found that average number of birds for small farm size is 301, for medium farm size is 740, while that of large size is 2288. It was observed that 57.50 per cent respondents were keeping the interval of 8-15 days between two batches, 30.00 per cent respondents upto seven days only between two batches and 12.50 per cent of

respondents of 16-21 days between two batches. Badubi *et al.*, (2004) reported that on average, small-scale producers had 4-5 production cycles per annum with an interval of 2-3 weeks between batches. Farooq *et al.*, (2013) observed that on average poultry farmers raised 4.97 flocks per year and duration between two batches was found 21 days.

The results revealed that majority of respondents (89.50%) were using electricity for brooding of day-old chicks. Whereas, 8.50 per cent and 2.00 per cent respondents were using kerosene lamp and charcoal as sources of heat for brooding of day-old chicks; respectively. Hedge and Shridhar (2012) reported that brooding was done using charcoal. For duration of brooding, it was observed that 59.50 per cent respondents were brooding their chicks for 1-2 weeks followed by 32.50 and 8.00 percent respondents having the duration of brooding of chick of 2-3 weeks and 3-4 weeks; respectively. The duration of brooding was dependent of environmental temperature i.e. during summer, brooding is required for a shorter duration and during winter, brooding is required for a longer duration. The results showed that 55.50 percent respondents were using rice husk as litter material, whereas, 43.00 per cent and 1.50 per cent respondents were using saw dust and chaffed paddy straw; respectively as litter material. The results revealed that the broiler farmers are selecting locally available material as litter on their broiler farms. It was found that 62.00 percent respondents were providing 20 hours light at their broiler farms followed by 27.50 per cent providing 16 hours and 10.50 per cent respondents providing 24 hours light on their broiler farms. Majority of farmer were using electric bulbs (79.50%) as source of light followed by 20.50 per cent respondents using kerosene lamps as source of light

provided at their broiler farms. As the method used for reducing heat stress during summer are concerned, it was observed that most of the respondents (73.50%) were using fans to alleviate heat stress on the broiler birds during summer. Whereas, 22.50 per cent and 4.00 per cent respondents were using wet curtains and water sprinklers; respectively to reduces the heat stress on birds during summer. From the results, it seems that the methods used for ameliorate

heat stress during summer are dependent of financial capacity of farmers and capacity of birds at their broiler farms. Majority of the respondents were engaging daily wagers (67.00%) at their broiler farms. Whereas, 31.00 per cent respondents had their family members engaged in carry out the routine chores of the farms and 2.00 per cent respondents had engaged permanent labourers for routine work for their broiler farms.

**Table.1** Housing patterns of broiler farms in Bihar

S.No.	Traits	Categories	No. of farmers	Percentage
1.	Location of farms	Rural area	149	74.50
		Urban area	51	25.50
2.	Place of location of farms	Within human dwelling	3	1.50
		Near human dwelling	90	45.00
		Away from human dwelling	107	53.50
3.	Connectivity with road	Yes	116	58.00
		No	84	42.00
4.	Orientation of farm buildings	East-West direction	139	69.50
		North-South direction	61	30.50
5.	Types of floor of the shed	Earthen	59	29.50
		Brick paved	22	11.00
		Cemented	119	59.50
6.	Floor space (S. ft./bird)	1.2-1.4	122	61.00
		1.4-1.6	75	37.50
		1.6-1.8	3	1.50
7.	Types of roof of the shed	Thatched	30	15.00
		Tiled	1	0.50
		Asbestos	133	66.50
		Iron sheet	36	18.00
8.	Wall of broiler shed	Open sided	117	58.50
		Closed sided with windows	83	41.50
9.	Overhangs present on walls/windows	Yes	110	55.00
		No	90	45.00
10.	Distance between two sheds	5m	20	10.00
		10m	40	20.00
		15m	83	41.50
		20m	57	28.50

**Table.2** Management practices of broiler farming adopted in Bihar

<b>S. No.</b>	<b>Traits</b>	<b>Categories</b>	<b>No. of farmers</b>	<b>Percentage</b>
1.	System of rearing	All-in all-out rearing	175	87.50
		Multi-batch rearing	25	12.50
2.	Methods of rearing of birds	Deep litter system	200	100.00
		Cage system	0	0
3.	Size of batch (No. of birds/batch)	500-1000	98	49.00
		1000-1500	58	29.00
		1500-2000	44	22.00
4.	Interval between two batches	Upto 7 days	60	30.00
		8-15 days	115	57.50
		16-21 days	25	12.50
5.	Brooding of day-old chick	Electric	179	89.50
		Charcoal	4	2.00
		Kerosene lamp	17	8.50
6.	Duration of brooding	1-2 weeks	119	59.50
		2-3 weeks	65	32.50
		3-4 weeks	16	8.00
7.	Types of litter material used	Rice husk	111	55.50
		Saw dust	86	43.00
		Chaffed paddy straw	3	1.50
8.	Light provided to the birds	16 hrs	55	27.50
		20 hrs	124	62.00
		24 hrs	21	10.50
9.	Source of light	Electric bulbs	159	79.50
		Kerosene lamps	41	20.50
10.	Methods used for reducing heat stress in summer	Fans	147	73.50
		Water sprinklers	8	4.00
		Wet curtains	45	22.50
11.	Labourers engaged at the farm	Family members	62	31.00
		Permanent labourers	4	2.00
		Daily wagers	134	67.00

**Table.3** Feeding practices adopted by the broiler farmers of Bihar

S. No.	Traits	Categories	No. of farmers	Percentage
1.	Types of feed used	Commercial	122	61.00
		Commercial + Home-made	78	39.00
2.	Feed purchased from	Companies suppliers/dealers	178	89.00
		Home- made	22	11.00
3.	Feeds used in the form of	Mash	2	1.00
		Pellet	122	61.00
		Mash + Pellet	76	38.00
4.	Types of feeders used for feeding of birds	Manual	128	64.00
		Semi-automatic	2	1.00
		Automatic	70	35.00
5.	Source of drinking water for birds	Open well	72	36.00
		Bore well	128	64.00
6.	Types of waterers used for drinking of birds	Manual	120	60.00
		Semi-automatic	80	40.00
7.	Feed conversion efficiency	1.5-1.8	81	40.50
		1.8-2.0	119	59.50
8.	Use of vitamins supplements	Regularly	126	63.00
		Sometimes	74	37.00

### Feeding practices

From study, it was observed that 61.00 per cent of respondents were using commercial feeds to feed their broiler birds, whereas, 39.00 per cent respondents were using both commercial and home-made feeds to feed their birds (Table 3). Singh *et al.*, (2010) reported that 68.7 per cent farmers purchased readymade feed, 4.0 per cent were found to have their own feed manufacturing unit and 27.3 per cent prepared the feed by mixing the purchased concentrates and energy feed ingredients. Education appeared to motivate the farmers to adopt improved feeding practices. Majority of the respondents (89.00%) were purchasing broiler feeds from companies suppliers/dealers based at nearest local markets and 11.00 per cent respondents were purchasing feed ingredients from local markets and prepared poultry feeds by

grinding and mixing in proper quantity at their homes. Most of the respondents (61.00%) were using pellet form of feed for feeding of their broiler birds. However, 38.00 per cent and 1.00 per cent respondents were using mash + pellet and mash forms of feed only for feeding of their birds. Regarding the types of feeders used for feeding of birds, it was found that 64.00 per cent respondents were using manual feeders for feeding of the birds. Whereas, 35.00 per cent and 1.00 per cent respondents were using automatic and semi-automatic feeders for feeding of the birds at their farms, respectively. Singh *et al.*, (2010) reported that farmers having farm size above 8000 birds were found using semi-automatic feeders.

For the source of drinking water, it was observed that 64.00 per cent of respondents were using water of bore-well for drinking

of their birds. However, 36.00 per cent respondents were using the water of open well as a source of drinking water for the birds at their farms. Again, it was found that 60.00 per cent respondents were using manual waterers for drinking of the birds at their farms. The remaining 40.00 per cent respondents were using automatic waterers for drinking of the birds at their farms. Hossein *et al.*, (2012) found that in the study of each group's feeding system, the good group has the highest percentage of using automatic systems (86/60) and the weak group has the highest percentage of using manual systems. In comparing three groups regarding the drinking water quality, it was observed that good, medium and weak groups drink 92%, 61.84%, and 75% fresh water, respectively. Hedge and Shridhar (2012) reported that bore well water was the major water source. Plastic automatic drinkers were used. Sathees Kumar *et al.*, (2013) observed that drinking water sourced from bore wells and feeding with layer starter crumble/mash were the practices adopted in most of the native chicken farms under intensive system in Tamil Nadu.

Regarding the feed conversion efficiency of the birds, it was observed that 59.50 per cent respondents had reported the feed conversion efficiency of 1.8-2.0 at their farms. However, 40.50 per cent respondents had achieved the feed conversion efficiency of 1.5-1.8 at their farms. Rahman *et al.*, (2016) observed that the feed conversion ratio was 2.82 and the meat: feed ratio was 1.79:1 under field condition in Mizoram. Badubiet *et al.*, (2004) reported that the average feed conversion ratio was estimated to be 2.72 (kg feed/kg live weight) and the average mortality was 9.15%. Hedge (2014) reported that the feed efficiency was 2.13 in his study. Feed efficiency was more in large farms having more than 4000 birds. The results also showed that 63.00 percent

respondents were providing vitamin supplements to their birds regularly for better live body weight gain and 37.00 per cent respondents were not providing vitamin supplements regularly but only time to time (sometimes) to their birds.

Hence it is concluded in the light of results obtained during the study, it can be concluded that a definite trend was observed on adoption of broiler farming practices by different categories of farmers. The respondents are not aware about the scientific housing system of broilers and are using flexible housing patterns for protecting the birds during inclement of weathers. The farmers are reasonably following the management of broilers according to available local resources to get maximum remuneration from the broiler farming.

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