



ISSN (E): 2277- 7695  
ISSN (P): 2349-8242  
NAAS Rating: 5.03  
TPI 2020; SP-9(8): 104-108  
© 2020 TPI

[www.thepharmajournal.com](http://www.thepharmajournal.com)

Received: 13-03-2020

Accepted: 15-04-2020

**Santosh Kumar Samantaray**  
Scientist (Agricultural  
Extension), KVK, Ganjam-I,  
OUAT, Odisha, India

**Sidhartha Ranabijuli**  
Scientist (Animal Science), KVK,  
Ganjam-I, OUAT, Odisha, India

**Bimalendu Mohanty**  
Senior Scientist & Head, KVK,  
Dhenkanal, OUAT, Odisha,  
India

**Bineeta Satapathy**  
Senior Scientist & Head, KVK,  
Angul, OUAT, Odisha, India

**Prasanta Kumar Panda**  
Scientist (Plant Protection),  
KVK, Ganjam-I, OUAT,  
Odisha, India

**Manas Ranjan Behera**  
SMS (Fishery Science) KVK,  
Puri, Odisha, India

**Corresponding Author:**  
**Santosh Kumar Samantaray**  
Scientist (Agricultural  
Extension), KVK, Ganjam-I,  
OUAT, Odisha, India

## Adoption level of scientific backyard poultry practices: A socio-technical analysis in the state of Odisha

**Santosh Kumar Samantaray, Sidhartha Ranabijuli, Bimalendu Mohanty,  
Bineeta Satapathy, Prasanta Kumar Panda and Manas Ranjan Behera**

### Abstract

A research study was performed to assess the level of adoption different practices with respect to backyard poultry rearing in Ganjam, Dhenkanal and Angul districts of Odisha. The data were gathered with the help of an interview schedule from 130 respondents. From the present analysis, 32.19 percent of farmers were aware of the improved health practices before the training, while the majority (67.80 percent) of rural poultry farmers were unaware of better management practices such as brooding, cleaning and use of disinfectant for the poultry unit, feeding ready-made feed, postmortem of dead birds by veterinary practitioners, isolation of diseased birds, supply of mineral mixture, prompt care of sick birds and consultation with vet doctors. However after the training received from KVK, Ganjam-I (83.89 percent), farmers were aware of the health practices and a majority (79.02 percent) adopted management strategies. Timely treatment of sick birds ( $t=20.29$ ), segregation or isolation of diseased birds and consulting veterinary doctors ( $t=19.10$ ) were found to be highly significant and positively related to the adoption of management practices. The age of the farmers showed negative correlation (-0.163), while the gender, educational level and holding of land were having significantly positive correlation with the level of adoption of the respondents. Significant values for t test were reported for all management practices except providing readymade feeds (0.57). The constraints found were low summer egg prices (92.3%), high production costs (91.53%), and financial difficulties (80.76%). This study suggests that the government should be proactive to develop credit linkage, training facilities and proper marketing facilities for the betterment of the backyard poultry farmers.

**Keywords:** Impact, training, adoption, constraints

### Introduction

Backyard poultry production is a considerably low input enterprise. These chickens are cheap source of protein for household consumption along with act as source of immediate income for the family. It is essential to understand the perceptions of the farmers towards rearing of backyard poultry and also the value of their products under the prevailing production systems so as to boost backyard poultry productivity and sustainability in rural areas. Rural backyard poultry production is being recognized as a crucial component of socioeconomic improvement among the weaker sections of the Indian society especially for landless labour, small and marginal farmers and farm women. As per the available statistics, rural poultry farming is contributing nearly 21 percent to the national egg production. The demand of eggs and meat of rural areas is fulfilled by rearing of backyard poultry (Nandi *et al.*, 2007; Panda *et al.*, 2008) [5, 9]. Backyard poultry rearing also finds an important role to fulfill the need of stress free and harmful residues free birds (Mandal *et al.*, 2006) [4]. In spite of the increased productivity of the industry in recent years, the industry has been facing with challenges which results in the loss of major market. Krishi Vigyan Kendras', Ganjam-I, Dhenkanal and Angul under OUAT had been organizing training programmes on backyard poultry rearing since long. There was hypothesis that (i) there is no significant difference on the level of adoption of improved backyard poultry management practiced before and after the training. (ii) The socioeconomic characteristics of the farmers have no significant relationship with their level of adoption of the management practices. Therefore, this study was conducted to assess the impact of various training programmes on adoption level of backyard poultry farmers regarding improved poultry management practices in districts of Ganjam, Dhenkanal and Angul in Odisha. This study will help to arrive at appropriate policy recommendations that will promote agricultural development within the state and the nation as well.

## Materials and Methods

The population of the study consisted of trainees, who had received trainings in backyard poultry rearing from Krishi Vigyan Kendra, Ganjam, Dhenkanal and Angul of Odisha during the year 2016-17 to 2018-19. The study was conducted in different villages located in these districts. 450 trainees participated in the training programmes conducted during the period. Out of which 287 farmers and farmwomen are still in the business. A sample of 130 trained backyard poultry owners comprising both farmers and farmwomen were selected as respondents by following random sampling technique. Data were collected by personal interview method with the assistance of interview schedule. To determine the adoption level of management practices by the respondents before and after the training, adoption scale was supplied with the list of technologies for the farmers to tick on, thereby indicating the level of adoption. They were also asked to indicate the constraints perceived against adoption level. Data were analyzed with both descriptive and inferential statistics. Hypothesis one was analyzed using 't' test while objective two was analyzed by using regression analysis. All analysis was done at 5 percent probability level. The extent of adoption of backyard poultry rearing practices was measured on the all practices against socioeconomic characteristics a 3 point rating scale of '3' for fully adoption, '2' for partial adoption and '1' for non adoption. While Likert scale was employed to measure the adoption index among all the rearing practices of backyard poultry. Garretts ranking technique was followed to investigate the constraints

perceived by backyard poultry farmers. Farmers were asked to rank the factors that were limiting poultry production. These were then transformed into units of scores by using following formula.

$$\text{Percentage position} = \frac{100 (R_{ij} - 0.5)}{N_j}$$

Where  $R_{ij}$  = Rank given for  $i$ th variable by the  $j$ th respondents.

$N_j$  = Number of variables ranked by the  $j$ th individual

## Results & Discussion

Age, gender, education level, land holding and the scale of poultry production are presented in Table 1. Majority (43.07%) of the poultry farmers were in the age group of 31-40 years rearing poultry which was followed by adult (27.7%), young (21.53%) and old (7.69%). It is evident from Table 1 that majority of the respondents who were age of 31-40 years had maximum adoption of different practices under back yard poultry farming. The study showed that majority (80.76%) of the respondents were female, it showed backyard poultry farming was very much popular among rural women. The number of females participated in terms of rural backyard poultry production is always higher than males (Ogunlade and Adebayo, 2009) [7]. Among the respondents, 36.92% were primary educated followed by high school (38.46%), illiterate (10.76%), intermediate (8.46%) and graduate (6.15%). Similar findings reported by (Nath *et al.*, 2012) [6].

**Table 1:** Distribution of respondent based on socioeconomic characteristics of the backyard poultry farmers (n=130)

Characteristics	Frequency	Percentage
<b>Age (years)</b>		
21-30	28	21.53
31-40	56	43.07
41-50	36	27.7
>51	10	7.69
<b>Gender</b>		
Male	25	19.23
Female	105	80.76
<b>Education level</b>		
Illiterate	14	10.76
Primary	50	38.46
Middle school	47	36.15
Intermediate	11	8.46
Graduate	8	6.15
<b>Land Holding</b>		
<1 acre	55	42.3
1-2 acre	43	33.07
>2 acre	32	24.61
<b>Occupation</b>		
Farming	41	31.53
Land less labours	64	49.23
Businessmen	25	19.23
<b>Flock size</b>		
<50 bird	25	19.23
101-150	66	50.76
151-200	29	22.3
>200	10	7.69
<b>Source of finance</b>		
Personnel saving	93	71.53
Money lender or village person	36	22.69
Financial institution	1	0.76
<b>Annual Income (Rs.)</b>		
<50000/ -	56	43.07
51000- 1lakh	53	40.46
>1 lakh	21	6.15

It is revealed from Table 1, majority (49.24%) of the respondents had no occupation. They were worked as a daily wage labourers rest 31.53 percent respondents occupation was farming followed by business (19.23%). It was concluded that majority of the backyard poultry farmers were the rural landless labourers. It is evident from Table 1, majority (50.76%) of the respondents had (101-150) bird per flock, which is followed by the flock size 151-200 birds per flock, <50 bird per flock (19.23%) and > 200 birds (7.69%). The small flock size may be attributed to lack of fund, marketing or even high mortality rate due to low adoption of improved poultry management technologies by farmers before training. However, with the training this may be improved in future. Lawal *et al.*, (2009) [3] noted that poultry farmers expanded their flock size due to adoption of improved poultry techniques.

It is obtained from Table 1 the major source of finance was from their personal savings. Majority (71.53%), respondents supported this view. Role of financial institution is only (0.76%) followed by finance from money lenders or villagers (22.69%). About (43.07%) of the respondents obtained an annual income of Rs

<50,000/- from backyard poultry, while (40.46%) obtained Rs 51000-1 lakh in their poultry business. However, 6.15 percent of the respondents obtained income of > 1 lakh from their business per annum. If farmers could increase production by adopting new technologies, they will increase their profit and income per year. The level of income realized from the venture even at small scale, may be the reason why farmers attended the training in order to learn new and more techniques in poultry production that may enhance productivity.

The study sought to look at the socio-economic characters of small scale backyard poultry farmers, ascertain the extent of adoption of improved poultry management practices before and after the training, identify constraints and determine the influence of socio-economic characteristics on adoption of improved management practices.

### Adoption of improved management practices by farmers before training

Almost 98% respondents were aware of culling, 52.30% for debeaking, 37.69% respondents provide feed according to poultry age and 36.15% rearing good species, however low adoption was recorded in postmortem of dead bird by vet doctors (2.30%), provide readymade feeds (10.76%), provide mineral mixture (11.53%), segregation of diseased bird and brooding (15.38%), Clean and use of disinfectant in unit (20.76%). Timely treatment of sick bird obtained score 21.53% and consulting vet doctors gained adoption mean score was 22.30%. Record keeping showed mean score 27.69%. Maximum respondents obtained medium to low adoption before training of improved backyard poultry farming. It showed before training of improved management practices poultry farmers are not much aware about the readymade feeds, postmortem of dead birds by vet doctors, use of antibiotics in early stage, clean and use of disinfectant in unit and not consulting vet doctors for treatment. Similar findings reported by Ezeibe *et al.*, 2014.

### Adoption of improved management practices by farmers after training

All the backyard poultry farmers adopted all fifteen improved management practices after training. There is significant adoption for all the rearing practices of the poultry (Table 2). Majority (99.23%) of the respondents adopted culling, consulting vet doctors for treatment and timely treatment of sick bird 97.69 percent. 93.07 percent respondents visit birds/shed frequently in a day and rearing of good species, 92.30 percent respondents provide feed according to birds age and 90.76 percent segregate of diseased birds. It is revealed from Table 2 that adoption index for clean and use of disinfect unit were obtained (85.38%), while for use of antibiotics in early stage birds and provide readymade feeds was 80.00 percent. The view for above management practices were also supported by Ithika *et al.*, 2013 [2]. Adoption index for all the improved backyard poultry rearing techniques obtained high after training.

**Table 2:** Distribution of respondents by level of adoption of improved management practices before and after training programme

Sl. No.	Management Practices	Before	After
1	Clean and use of disinfect unit	20.76	85.38
2	Record keeping	27.69	79.23
3	Visit birds /shed frequently in a day	30.76	93.07
4	Brooding	15.38	72.30
5	Culling	97.69	99.23
6	Use of antibiotics in early stage of bird	25.38	80.00
7	De-beaking	52.30	76.92
8	Provide readymade feeds	10.76	80.00
9	Timely treatment of sick bird	21.53	97.69
10	Postmortem of dead bird by vet doctors	2.30	58.46
11	Segregation of diseased birds	15.38	90.76
12	Provide mineral mixture	11.53	82.30
13	Provide feed according to age	37.69	92.30
14	Rearing of good species	36.15	93.07
15	Consulting vet doctors	22.30	97.69

### Difference in adoption level before and after the training

The 't' test result revealed values for before and after training as well as t calculated which is higher than actual t value Table 3. This indicates a significant ( $p < 0.05$ ) difference in the adoption level before and after the training. Highest significant values obtained for timely treatment of sick bird. Lowest 't' value obtained for culling (1.41) and debeaking

(0.57). The overall 't' value is obtained 11.86 which is highly significant at 0.05 level of probability. This shows that, respondents adopted improved backyard poultry technologies more after the training (Yilmaz *et al.*, 2006). It is therefore important for farmers to be trained frequently on new poultry technologies, as these will definitely increase production. The findings confirm with the finding of Sahu *et al.* (2010).

**Table 3:** Relationship between characteristics of Backyard poultry keepers and their extent of adoption

Sr No.	Management Practices	“t” test
1	Clean and use of disinfect unit	15.34**
2	Record keeping	-10.76**
3	Visit birds /shed frequently in a day	14.60**
4	Brooding	13.05**
5	Culling	1.41
6	Use of antibiotics in early stage of bird	12.45**
7	De-beaking	0.57
8	Provide ready made feeds	17.03**
9	Timely treatment of sick bird	20.29**
10	Postmortem of dead bird by vet doctors	12.85**
11	Segregation of diseased birds	19.10**
12	Provide mineral mixture	18.00**
13	Provide feed according to age	12.45**
14	Rearing of good species	12.30**
15	Consulting vet doctors	19.10**

Significant at 0.05% level, df =129

### Correlation of adoption behavior:

The adoption of improved management practices of backyard poultry farming also depends on farmer's personal as well as social and economic condition. Correlation coefficients of eight variables were presented in Table 4. This indicated the relationship between variables of respondents with adoption behavior. Age had negative significant correlation with adoption level -0.163. It gave an idea that young generation might be try to adopt new technologies. Similar findings reported by Rahman (2007). Gender of the respondent had shown significant correlation with adoption level. It is revealed those females are highly involved in backyard poultry rearing than the male respondent. Education was

significantly associated with adoption level. The respondents who had basic education were shown high level of adoption, than the illiterate respondent. The present findings were similar to Nath *et al.* (2012) [6]. Land holding of respondents exhibited positive significant correlation with adoption level. Occupation, flock size and source of finance showed non significant relationship with adoption of backyard poultry rearing practices. The finding is in agreement with the finding of Semmaran *et al.* (2008). It is evident from Table 4 annual income from poultry showed positive significant correlation with improved backyard poultry practices. It indicates if respondents adopted improved poultry rearing practices they will increase their income (Lawal *et al.*, 2009) [3].

**Table 4:** Relationship between the characteristics of the backyard poultry keeper and their extent of adoption

Sr. No.	Explanatory variables	Coefficient of correlation (r)
1	Age	-0.163*
2	Gender	0.771*
3	Education level	0.242*
4	Land holding	0.114*
5	Occupation	0.006
6	Flock size	0.098
7	Source of Finance	-0.056
8	Annual Income	-0.189*

Correlation is significant at 0.05% level of probability

### Constraints militating against poultry production among respondents

In the study it was observed that majority of the backyard poultry farmers faced problem like low egg price in summer (Table 5). The highest mean score (92.3%) recorded for this parameter, while high cost of input showed mean score 91.53%. Low egg cost and high cost of input identified as major constraints and ranked first and second position, respectively in improved backyard poultry farming. Difficulty in finance obtained mean score (80.76%) and ranked third. High death rate of bird exhibited mean score 79.23% and achieved rank fourth. Dependency of market on brokers also perceived major constraints in poultry, it gained mean score 72.3%. Lack of initial capital and unavailability of grading equipments ranked sixth, obtained mean score 63.84%. The similar findings are similar with reported by Thorat (2005). It is evident from Table 5 that 63.07 percent mean score obtained for lack of awareness of prompt veterinary aids. Difficulty in supply inputs obtained mean score by

respondents was 54.61% while illiteracy among poultry farmers were showing means score 48.46%. It shown that if respondents were illiterate they were not gained the technology rapidly. For lack of transportation respondents received mean score 43.84 percent. Mean score 30 percent reported for low whole sale price of egg, while 28.15 percent reported for poor feed quality from the feed agencies. Unavailability of improved bird on time was also a major constraint obtained 26.92 percent mean score, while 19.30 percent obtained for lack of support from technical person. The absence of an effective, well trained extension network is a significant constraints to the development of poultry industry and the capacity of small producers in particular field. In effective and in accessible extension and extension network have resulted an inadequate human technical capacity and expertise throughout the poultry industry. Access to credit is of core importance to all aspects of the poultry industry as these may hidden expansion (Olyemi *et al.*, 2000) [8].

**Table 5:** Distribution of respondents by constraints militating against poultry production in the area (N=130)

Sr No.	Constraints	Frequency	Mean Score	Rank
1	Lack of awareness of prompt veterinary aids	82	63.07	VII
2	Un availability of grading equipments	83	63.84	VI
3	Not available improved bird on time	35	26.92	XIII
4	High death rate of bird	103	79.23	IV
5	Lack of support from technical persons	25	19.3	XIV
6	Poor feed quality	37	28.15	XII
7	Dependency of market on Brokers	94	72.3	V
8	Lack of support from family members	12	9.23	XVI
9	Religious constraints	5	3.84	XVII
10	Difficulty in finance	105	80.76	III
11	Lack of initial capital	83	63.84	VI
12	Illiteracy among poultry farmers	63	48.46	IX
13	High cost of inputs	119	91.53	II
14	High risk	22	16.92	XV
15	Difficulty in supply inputs	71	54.61	VIII
16	Whole sale price of egg is low	39	30.00	XI
17	Lack of transportation	57	43.84	X
18	Low egg production in summers	120	92.3	I

### Conclusion

The result showed that there is a significant change in adoption of scientific management practices by the respondents after availing the training programme from KVK. Overall the training improved the backyard poultry production practices through adoption of new techniques. The present study also concluded that the major constraints in poultry were low egg price in summer, high cost of inputs, difficulty in finance and high death rate of birds. There are important implications for policy makers and technical aid, expertise at field level. It is hereby recommended that mass training programmes for the backyard poultry growers shall be chalked out by state govt. to uplift poverty and enable the rural communities to increase household income. Government should also try to increase the credit linkage facilities for the farmers.

### References

1. Ezeibe ABC, Okorji EC, Chah JM, Abudei RN. Impact of entrepreneurship training on poultry farmers adoption of improved management practices in Enugustate, Nigeria. *Academic Journals*. 2014 9:1604-1609.
2. Ithika CS, Singh SP, Gautam G. Adoption of scientific poultry farming practices by the broiler farmers in Haryana. India. *Indian Journals of Applied*, 2013.
3. Lawal BO, Toimiro DO, Makanjuoia BA. Im-pact of agricultural extension practices on the Nigereian poultry farmers standard of living: a perceptional analysis. *Trop. Sub. Trop. Agro*. 2009; 10:465-473.
4. Mandal MK, Khandekar N, Khandekar P. Backyard poultry farming in Bareilly district of Uttar Pradesh, India: An analysis. *Livestock Research for rural Development*, 2006; 18(7), <http://www.irr.org>.
5. Nandi S, Sharma K, Kumar P, Nandi D. Poultry farming: A rapidly growing profiTable business. *Poultry Line*. 2007; 7(12):19-20.
6. Nath BG, Toppo S, Chandra R, Chatlod LR, Mohanty AK. Level of adoption and constraints of scientific backyard poultry rearing practices in rural tribal areas of Sikkim, India. *Journal of Animal and Feed Research*. 2012; 2:133-138.
7. Ogunlade I, Adebayo SA. Socio-economic status of women and girls in Bangladesh. *Journal of Nutrition*. 2009; 133:4027-4030.
8. Oluyemi JA, Robert FA. Poultry production in warm wet climate. Spectrum Book Ltd. Ibadan, Nigeria, 2000
9. Panda AK, Raju MVLN, Rama Rao SV. Poultry Production in India: Opportunities and Challenges a head. *Poultry Line*. 2008; 8:11-14.
10. Rahman S. Adoption of improved technologies by the pig farmers of Aizol district of Mizorum, India, 2007.