



Research Paper

Analysis of benefit-cost (B:C) ratio of *Vanaraja* and Local chicken of Assam under backyard system of rearing.

*R. Islam¹, P. Nath², A. Bharali³ and R. Borah⁴

¹SMS (Animal Science), ²Programme Coordinator,

³SMS (Plant Protection) and ⁴SMS (Soil Science)

Krishi Vigyan Kendra, Sivasagar, Assam Agricultural University

Received 18 November, 2015; Accepted 30 December, 2015 © The author(s) 2015. Published with open access at www.questjournals.org

ABSTRACT:- Twenty numbers of farmwomen from each block, thus a total of one hundred numbers of farmwomen were selected randomly from five blocks of Sivasagar district. The farmwomen were selected on the basis of their early experience in keeping local poultry along with *Vanaraja* chicken at backyard system for the purpose of the study. Items of cost included fixed cost e.g. land and building, equipments and variable costs e.g. cost of day-old chick, feed cost, vaccine cost, medicine cost, labour cost, depreciation on poultry shed and miscellaneous cost. Return items included egg, cocks and spent hens. The labour cost accounted for 58.48 percent of the total cost of production of *Vanaraja* chicken followed by feed cost (13.58 %), chick cost (12.80 %) and depreciation on poultry house (9.70 %) up to 18 months of age. The total cost of production up to 72 weeks of age was found to be higher in *Vanaraja* (Rs. 2,577.68) than its local counterpart (Rs. 2,150.98). The maximum amount of income was contributed by selling of eggs (40.00 %) followed by sale of cocks (34.36 %) and sale of spent hens (25.64 %) in case of local chicken. The benefit-cost (B:C) ratio in *Vanaraja* and local chicken were recorded as 2.60 and 2.27 respectively in the present study. From the study, it can be concluded that small scale *Vanaraja* rearing is a profitable venture for farmwomen.

Keywords:- B:C ratio, expenditure, local chicken, returns and *Vanaraja*

I. INTRODUCTION

Poultry keeping is an age old practice among rural and tribal community in Assam. Mostly women and children are involved in village poultry rearing. Most of them rear local poultry at their backyard as secondary source of their livelihood and also to supply family nutrition through production of egg and meat. However, due to inferior productivity of the local chicken some improved dual type chickens like *Vanaraja*, *Giriraja*, *Kamrupa* etc. have been gaining popularity among the farmwomen of North-eastern region particularly in Assam. However, no systemic studies have been made so far to know the cost of rearing of such small scale backyard poultry with *Vanaraja* and local chicken. Keeping this point in mind a study has been planned with the following objectives:

1. To know the total cost of production up to 18 months of rearing
2. To know the gross income
3. To know the net income
4. To know the benefit-cost ratio

II. METHODOLOGY

The study was conducted in *Nazira*, *Sonari*, *Sapekhati*, *Lakwa* and *Demow* development blocks of *Sivasagar* District during the period from January, 2013 to December, 2014. These five blocks were purposively selected as they had higher poultry population as compared with others. Twenty numbers of farmwomen from each block, thus a total of 100 numbers of farmwomen from various self help groups (SHGs) were selected randomly on the basis of their early experience in keeping indigenous as well as *Vanaraja* birds in their household. The farmwomen, who kept a minimum of 10 numbers of indigenous chickens along with 10 numbers of *Vanaraja* chickens of either sex, were considered for the study.

The birds were kept under backyard system. The birds were vaccinated with *Ranikhet* and *Gumboro* disease vaccines as per standard vaccination schedule. The farmwomen were provided with a register to record all the expenses and returns from day old to 18 months of age of the birds. The researcher also helped in doing so and monitored time to time to records all the relevant data in the register. Under backyard system both egg and meat were considered as a source of income and all the produced eggs were considered as table eggs. The eggs and birds were sold to directly to the consumer at the prevailing market rates. Items of cost included fixed cost e.g. land and building, equipments and variable costs e.g. cost of day-old chick, feed cost, vaccine cost, medicine cost, labour cost, miscellaneous cost and depreciation cost. Feed cost was calculated by the following formula:

In case of Vanaraja chicks-

Feed cost= Quantity of broiler starter feed offered up to 28 days of age X Market price of per Kg of feed

In case of local chicks-

Feed cost= Quantity of broken rice offered up to 28 days of age X Market price of per Kg of broken rice

Return items included egg, live cocks and spent hens. Data were collected from the selected farmwomen recorded in the register. The net returns were calculated by deducting the returns from eggs or birds from net cost of production. The cost-benefit ratio was calculated by dividing the total gross return by net cost of production. The mortality rates in *Vanaraja* and local chicken were considered as 20 and 10 % respectively during the whole experimental period. The data on various expenses and returns thus collected tabulated and were subjected to statistical analysis as *Snedecor and Cochran (1994)*.

III. RESULTS AND DISCUSSION

The fixed and variable costs for rearing a small unit of backyard poultry of 20 numbers of birds (10 numbers of *Vanaraja* and 10 numbers of local) are presented in Table 1. The labour cost alone accounted for 70.10 percent of the total cost of production in case of local chicken followed by depreciation on poultry house (11.62 %), chick cost (9.30 %), feed cost (4.65 %) and so on. Similarly in *Vanaraja* birds also labour cost was the highest (58.48 %) among the cost of production followed by feed cost (13.58 %), chick cost (12.80 %), depreciation cost on poultry house (9.70 %). *Uddin et al. (2013)* also reported similar result that human labour cost comprised the highest percentage of total cost. In contrast to the present findings, *Nath et. al. (2013)* reported that feed cost alone contributed 90.95 % of the total cost of production followed by chick cost, medicine cost and vaccine cost in backyard poultry farming in Sikkim. The cost of vaccine only accounted for 1.48 % and 1.23 % of the total cost of production in case of local and *Vanaraja* chicken respectively. Similarly cost of medicine and feed supplements shared only 2.15 % and 2.84 % of the total cost of production in local and *Vanaraja* birds respectively. However, *Oladunni and Fatuase (2014)* reported the cost of medication was only 0.81 % of the total cost in backyard poultry in Nigeria. The lower cost of medicines and other feed supplements in local chicken as compared with *Vanaraja* chicken might be due to the lesser incidence of disease outbreak in local chicken because of their higher adaptability in backyard system than *Vanaraja* birds. In the present study, the total cost of production up to 72 weeks of age was found to be higher in *Vanaraja* (Rs. 2,577.68) than its local counterpart (Rs. 2,150.98). The higher production cost in *Vanaraja* might be due to higher feed and chick cost. The cost of

Table 1. Estimated cost of rearing for small unit of local and *Vanaraja* chicken

Particulars	Local	Amount (Rs.)	<i>Vanaraja</i>	Amount (Rs.)
A. Fixed cost				
a) Land	Existing	-	Existing	-
b) Poultry Shed made of locally available	L/S	500.00	L/S	500.00
c) Equipments	Not required	Nil	Not required	Nil
Total fixed cost	-	500.00	-	500.00
B. Variable cost				
a) Cost of day old chick 10 nos.	@ Rs. 20/- per chick	200.00 (9.30)	@ Rs. 33/- per chick	330.00 (12.80)
b) Cost of feed up to 28 days of age				
i) For local chick 5 kg of broken rice for 10 nos. chicks	@ Rs. 20/- per Kg of broken rice	100.00 (4.65)	@ Rs. 35/- per Kg of feed	350.00 (13.58)
ii) For <i>Vanaraja</i> chick 1kg of Broiler Starter feed per bird.				

c) Cost of vaccine	@ Rs. 1.59/chick	31.80 (1.48)	@ Rs. 1.59/chick	31.80 (1.23)
d) Cost of medicine, feed supplements etc.	@ Rs. 2.31 per bird	46.20 (2.15)	@ Rs. 3.67 per bird	73.40 (2.84)
e) Cost of labour @ 10 hrs. per month=1.25 Man-days, Total Man-days: 22.5 for the both flock (Vanaraja and Local)	@ Rs. 134/- per Man-day	1,507.50 (70.10)	@ Rs. 134/- per Man-day	1,507.50 (58.48)
f) Miscellaneous cost	L/S	15.00 (0.70)	L/S	35.00 (1.36)
g) Depreciation on poultry shed @ 33.33 per year	-	249.98 (11.62)	-	249.98 (9.70)
Total variable cost	-	2,150.98	-	2,577.68
Total cost of production		2,150.98		2,577.68
Cost of production per bird		215.10		257.77

*Figures in parenthesis indicates percent of total cost of production

production per bird was estimated as Rs. 215.10 in local and Rs.257.77 in Vanaraja chicken. In contrast to the present findings, Nath et al. (2013) reported higher cost of production per bird as Rs. 729.50 under scientific backyard rearing of high yielding chicken in Sikkim.

While studying income, it was found that maximum amount of income was contributed by selling of eggs (40.00 %) followed by sale of cocks (34.36 %) and sale of spent hens (25.64 %) in case of local chicken (Table 2). Similar trends of share were also recorded for Vanaraja birds under backyard system. Nath et al. (2013) also recorded that the highest amount of income in backyard poultry farming was coming from selling of eggs (65.96 %) in Sikkim. The income from Vanaraja chicken by selling of eggs was much higher (96.92 %) than its local counterparts, which was due to production of more numbers of eggs by Vanaraja birds, might be because of their better genetic makeup. The total gross income in Vanaraja chicken was also 37.56 % more

Table 2: Estimated Returns from various components.

Particulars	Local	Amount (Rs.)	Vanaraja	Amount (Rs.)
a) Income from sale of eggs (5 nos. of local and 4 nos. of Vanaraja hens)	Av. annual egg production: 65 eggs/hen, Total egg production: 325 nos. @ Rs. 6/egg	1,950.00 (40.00)	Av. annual egg production: 160 eggs/hen, Total egg production: 640 nos. @ Rs. 6/egg	3,840.00 (57.26)
b) Sale of cocks (4 nos. of local and 4 nos. of Vanaraja cocks)	Av. weight: 1.675 Kg, Total weight: 6.70 Kg @ Rs. 250/Kg	1,675.00 (34.36)	Av. weight: 3.228 Kg, Total weight: 12.912 Kg @ Rs. 160/Kg	2,065.92 (30.81)
c) Sale of spent hens (5 nos. of local and 4 nos. of Vanaraja hens)	@ Rs. 250/- per hen	1,250.00 (25.64)	@ Rs. 200/- per hen	800.00 (11.93)
Total gross income	-	4,875.00	-	6,705.92
Net income		2,724.02		4,127.94
Net income per bird		272.40		412.80
Benefit : Cost ratio		2.27		2.60

*Figures in parenthesis indicate per cent of total returns.

than the local chicken under backyard rearing. Similarly the net income from Vanaraja birds was also increased by 51.54 % compared to local chicken. The benefit-cost (B:C) ratio in Vanaraja and local chicken were recorded as 2.60 and 2.27 respectively in the present study. The higher benefit cost ratio in Vanaraja was due to more egg production and attainment of better body weight in the given period of time as compared to local chicken. Uddin et al. (2013) also reported much higher benefit cost ratio (5.57) in native poultry reared in the coastal regions of Bangladesh. However Das et al. (2014) reported much lower benefit cost (B:C) ratio as 1.73 in Rhode Island Red chicken rearing in backyard system in West Bengal. Nath et al. (2013) also reported benefit cost ratio as 1.73 in scientific backyard poultry farming in Sikkim. Sumy et al. (2010) assessed that there was profitability in rearing indigenous chicken under backyard with a Benefit Cost Ratio of 1.60 and 1.61 in two of the study areas. Masud and Real (2013) reported that the average cost benefit ratios of layer and broiler farms were 1.15 and 1.10 respectively under intensive system of management in Bangladesh. The higher B:C ratio in

case of *Vanaraja* chicken indicated that *Vanaraja* rearing was much more profitable in the study areas the local chicken.

IV. CONCLUSION

It is revealed that the benefit cost ratio of *Vanaraja* chicken is better than our local chicken under backyard system of rearing, which indicates that small scale *Vanaraja* rearing is a profitable venture for farmwomen. Therefore subsistence poultry keeping could be encouraged in Assam as an effective means for income and employment generation particularly for women which will ultimately reduce the poverty and improve the overall livelihood.

ACKNOWLEDGEMENT

The authors are thankful to the Directorate of Extension Education, Assam Agricultural University, Jorhat-13, Assam for providing facilities and guidance to carry out the research works. The other necessary supports provided by the staffs of Krishi Vigyan Kendra, Sivasagar are also duly acknowledged.

REFERENCES

- [1]. P. K. Das, P. R. Ghosh, S. Pradhan, B. Roy, and D. Mazumdar, Benefit-cost analysis of Rhode Island Red chicken rearing in backyard on the basis of egg production performance, *Veterinary World*, 7(8), 2014, 605-609.
- [2]. M. Masud, and I.I. Real, Economic benefit of farmers from small-scale broiler and layer farming of Thakurgaon District, *Bangladesh Reserach Publication Journal*, 8(4), 2013, 191-195.
- [3]. B. G. Nath, P. K. Pathak and A. K. Mohanty, Scientific backyard poultry rearing technology: an approach to awareness and adoption of technology for livelihood development of rural farmers in Sikkim, India, *Russian Journal of Agriculture and Socio-Economic Science*, 22 (3), 2013, 38-43.
- [4]. M. E. Oladunni, and A.I. Fatuase, Economic Analysis of Backyard Poultry Farming in Akoko North West Local Government Area of Ondo State, Nigeria. *Global Journal of Bioogyl, Agriculture and Health Science* 3(1), 2014, 141-147.
- [5]. G.W. Snedecor and W.G. Cochran, *Statistical Methods. 6th Edn, Oxford and IBH Publishing Co. Calcutta, 1994.*
- [6]. M.C. Sumy, M.S.I. Khokon, M.M. Islam, and S, S, S. Talukder Study of the socio-economic condition and productive performances of backyard chicken in some selected areas of Pabna District. *Journal of Bangladesh Agricultural University* 8(1), 2010, 45-50.
- [7]. M. T. Uddin, M. M. Islam, S. Salam and S. Yasmin Economics of native poultry rearing in the coastal regions of Bangladesh. *Bangladesh Journal of Animal Science* 42(1), 2013, 49-56.