Bulletin of Environment, Pharmacology and Life Sciences
Bull. Env. Pharmacol. Life Sci., Vol 9[3] February 2020 : 26-30
©2020 Academy for Environment and Life Sciences, India
Online ISSN 2277-1808
Journal's URL:http://www.bepls.com
CODEN: BEPLAD
Global Impact Factor 0.876
Universal Impact Factor 0.9804
NAAS Rating 4.95

ORIGINAL ARTICLE **OPEN ACCESS**

A Comparative Study of Benefit Cost (B: C) ratio of Kaveri and local Chicken under Backyard management System Tribal Areas of Jharkhand

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ABSTRACT

An On farm trial was conducted in tribal villages of Jharkhand to evaluate the comparative Benefit- Cost ratio of backyard poultry farming with Kaveri birds and local chicken. Badri and Soso villages of Angara block (Ranchi district) were selected for this study. The trial was conducted with 40 farmwomen from selected villages ,who were doing backyard poultry. Items of cost in backyard poultry farming included fixed cost e.g. poultry shed, 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 highest cost accounted for feeding in Kaveri and Desi chicken are 50.07 and 45.18 percent respectively. The total cost of production up to 72 weeks of age was found to be higher in Kaveri (Rs.2995.60) than in Desi chicken (Rs. 1665.50). The maximum amount of income was contributed by selling of eggs (50.54%) followed by sale of cocks (43.48 %) and sale of spent hens (5.96 %) in case of Kaveri chicken. The benefit-cost (B:C) ratio inKaveri and local chicken were recorded as 3.35 and 3.10 respectively in the present study.

Keywords:*-Benefit- cost ratio, Breed , local chicken, returns and Kaveri chicken.*

Received 12.12.2019 Revised 03.01.2020 Accepted 30.01.2020

INTRODUCTION

Rural poultry production system known as backyard poultry production is a common phenomenon in many developing countries like India. Small holder poultry production (i.e. family poultry) is an appropriate system that makes the best use of locally available resources .Family flocks of chicken are important provider of nutritious food like eggs and meat for tribal families of Jharkhand . Moreover, it is also valued for religious and cultural life of rural people of Jharkhand tribal areas .There are three production systems for family poultry farming in tribal areas -Free range, Backyard and small scale intensive with productivity of 20-60,30-100,and 80-150eggs / hen / year.

India rank 3rd and 6th rank in the world in the poultry eggs and meat production respectively [4].

In Jharkhand desi / indigenous chicken rearing is a traditional practice among rural and tribal communities. Backyard poultry farming is an integral part of tribal Agriculture, being practiced by farmwomen of Jharkhand since years. More than 90% of tribal families from rural areas of this state maintain small flocks as backyard poultry, it serves as additional source of income and inexpensive means of getting nutrition for tribal families. However the number of birds raised by a family varies, the number of birds is more in peri urban areas. About 60% families have 6 to 8 birds in their flock. Poultry production in tribal families is totally women's domain, who manage production as well as selling of birds and eggs [6]. Most of the farmers rear locally available chicken at their home as secondary source of their livelihood and also to supply family nutrition through production of quality eggs and meat. Poultry production by rural poor households play vital role in livelihood of tribal, including income, nutrition, food security, saving, insurance and gender equality [1]. It is most popular enterprise among livestock for small farmers of tribal areas because of less requirement of feed ,water and other production inputs. In the free range backyard system there is little intervention in the life cycle of birds. The major intervention

was seen in feed and water supplementation, overnight housing and to a much lesser degree in health management .The area of reproduction, selection, mating , incubation and brooding is left to birds. It was observed that the poultry birds are partly confined within a fenced yard or merely within an overnight shelter. Production is not much under this management system. The potentiality of indigenous birds in terms of egg production is only 50 to 60 eggs/ bird/ year and meat production is also very low [6, 5]. In this situation there is a need for intervention in the existing practice to improve income of resource poor farmers as well as making backyard poultry a sustainable enterprise .To overcome the problem of poor productivity of local chicken varieties , different agencies like SAU's, KVK's, Research institutes and NGO's have introduced some improved dual type rural varieties of chicken like Kaveri, Divyayan Red, Jharsim, Vanraja etc.These varieties are gaining popularity among farmwomen in Jharkhand.

In this context, improved dual type variety Kaveri was introduced by Central Poultry Development Organization, Hissargatta, Bangalore. The colour pattern of Kaveri bird is multicolour with single comb and yellow colour shank and skin. These birds have characteristic features like low early chick and laying mortality, excellent flock uniformity, early sexual maturity, withstanding predators, laying brown colour eggs etc. as reported by CPDO, 2014, the organization also recommended it as a suitable bird for rural backyard poultry farming. Predation is one of the serious constraints in backyard poultry and withstanding to any predator is the key feature of this strain to be considered for adding in to the backyard poultry production system [4] . The new variety was introduced by KVK scientists to the poultry farmers of tribal villages along with improved management system with an objective to enhance the profitability of the small enterprise. To Know the cost of rearing of such small scale backyard poultry with Kaveri and local chicken this trial has been conducted in villages of Ranchi district.

MATERIAL AND METHODS

The study was conducted in Badri and Soso villages situated in Angara block of Ranchi district . These are adopted villages of Krishi Vigyan Kendra , Ranchi. In these villages poultry rearing is very commonly practiced by farmwomen. Twenty tribal farmwomen from each village were selected for trial , thus a total of 40 farmwomen from various self Help Groups (SHG's) of two villages were randomly selected on the basis of their early experience in keeping indigenous as well as improved Dual purpose birds in their household . The farmwomen, who reared a minimum of 10 numbers of indigenous chicken along with 10 numbers of Kaveri chickens (supplied by KVK) of either sex, were taken for the study.

The birds were kept under backyard system with improved management system. Vaccination was done for *Ranikhet (NCD)* and *Gumboro (IBD)* disease as per standard vaccination schedule. Minimum intervention was done in the existing housing and feeding practices except adding some amount of feed to small chicks and supplementation at the time of laying .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 directly to the consumer at the prevailing market rates. The farmwomen were provided a register to record all the expenses and returns from day old to 18 months of age of the birds. The Scientist and field staff of Krishi Vigyan Kendra, also helped them in doing so and monitored time to time .All the relevant data were recorded in the register. Items of cost included fixed cost e.g. poultry houses, 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 Kaveri chicks-

Feed cost= Quantity of broiler starter feed offered from 30^{th} to 60 days of age **X** Market price of per Kg of feed

In case of local chicks- Feed cost= Quantity of broken rice offered from 30^{th} to 60 to 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 women farmers ,which was 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 *Kaveri* 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 [5].

RESULTS AND DISCUSSION

In this study it was assumed that such a small backyard poultry unit can be maintained by family members and hence there is no any provision of laborers in estimation of benefit cost ratio.

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

Particulars	**Local**	**Amount (Rs.)**	***Kaveri***	**Amount (Rs.)**
A. Fixed cost				
a. Land	Existing	-	Existing	-
b. Poultry Shed made of locally available resources	L/S	1000.00	L/S	1000.00
c. Equipments	N/R	-	N/R	-
d. Total fixed cost		1000.00		1000.00
B.Variable cost				
a.Cost of 30days old chick 10 nos.	@Rs. 75/ chicks	750.00 **45.18**	@Rs. 150/ chicks	1500.00 **50.07**
b. Cost of feed from 30 days to 60 days of age i) For local chick 5 kg of broken rice for 10 nos. chicks ii) For *Kaveri* chick 1kg of Broiler Starter feed per bird.	@ Rs. 25/- per kg of broken rice	125.00 **7.50**	@ Rs. 40/- per Kg of feed	400.00 **13.35**
c. Cost of vaccine	@ Rs. 5.80/chick	58.00 **3.40**	@ Rs. 5.80/chick	58.00 **1.93**
d. Cost of medicine, feed supplements etc.	@ Rs. 16.55 per bird	165.50 **9.96**	@ Rs. 21.76 per bird	217.60 **7.26**
e) Cost of labour @ 10 hrs. per month=1.25 Man-days, Total Man- days: 22.5 for the both flock (*Kaveri* and Local)	@ Rs. 300/- per Man-day	Farmer's contribution	@ Rs. 300/- per Man-day	Farmer's contribution
f) Miscellaneous cost	L/S	250.00 **15.06**	L/S	490.00 **16.35**
g) Depreciation on poultry shed @ 33.33 per year	Depreciation on poultry shed @ 33.33 per year	330.00 **19.87**	Depreciation on poultry shed @ 33.33 per year	330.00 **11.01**
Total variable cost		**1660.50**		**2995.60**
Total cost of production		**1660.50**		**2995.60**
Cost of production per bird		**166.05**		**299.56**

The fixed and variable costs for rearing a small unit of backyard poultry of 20 numbers of birds (10 numbers of Kaveri and 10 numbers of local) are presented in Table 1.

The chicks cost alone accounted for 45.18 percent of the total cost of production in case of local chicken production , which is followed by depreciation on poultry house (19.87 %), miscellaneous expenditures (15.06 %), medicine cost (9.96%) feed cost (7.50 %) and so on. Similarly in Kaveri birds also chicks cost was the highest (50.07 %) among the cost of production followed by miscellaneous expenditures (16.36 %),feed cost (13.35 %), depreciation cost on poultry house (11.01 %). Uddin *et al*. [7] also reported similar result that human labour cost comprised the highest percentage of total cost. In contrast to the present findings, Nath *et. al.* [2] 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 3.40 % and 1.93 % of the total cost of production in case of local and Kaveri chicken respectively, which is very less in comparison to intensive chicken farming system . Similarly cost of medicine and feed supplements shared only 9.96 % and 7.26 % of the total cost of production in local and Kaveri birds respectively.

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.

Table 2: Estimated Returns from various components.

Particulars	**Local**	**Amount (Rs.)**	**Kaveri**	**Amount (Rs.)**
a) Income from sale of eggs Local hens - 5 nos. Kaveri hens- 4 nos.	Av. annual egg production: 63 eggs/hen, Total egg production: 315 nos. @ Rs. 8/egg	2520.00 **50.31**	Av. annual egg production: 159 eggs/hen, Total egg production: 636 nos. @ Rs. 8/egg	5080.00 **50.54**
b) Sale of cocks Local cocks - 5 nos. Kaveri cocks- 4 nos	Av. weight: 1.724 Kg, Total weight: 6.88 Kg @ Rs. 300/Kg	2064.00 **39.62**	Av. weight: 3.642 Kg, Total weight: 14.56 Kg @ Rs. 300/Kg	4370.40 **43.48**
c) Sale of spent hens Local hens - 5 nos. Kaveri hens- 4 nos	@ Rs. 125/- per hen	625.00 **11.99**	@ Rs. 150/- per hen	600.00 **5.96**
Total gross income		**5209.00**		**10050.40**
Net income		**5209.00**		**10050.40**
Net income per bird		**520.940**		**1005.40**
Benefit : Cost ratio		**3.10**		**3.35**

CONCLUSION

On the basis of the above trial it may be concluded that Kaveri chicken is more profitable than local varieties of chicken under backyard poultry farming system especially for farmwomen. Backyard poultry farming with Kaveri variety could serve as additional source of income and for employment generation specially for the resource poor farmer's.

In context of tribal farmers or farmwomen, rearing of Kaveri chicken could be a very effective enterprise for livelihood support and to enhance the annual income of farmer's. Hence Kaveri chicken may be promoted in backyard poultry farming system of Ranchi district as well as of Jharkhand and in other parts of India.

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CITATION OF THIS ARTICLE

B Mahto, A Chandra,D Mahto. A Comparative Study of Benefit Cost (B: C) ratio of Kaveri and local Chicken under Backyard management System Tribal Areas of Jharkhand. Bull. Env. Pharmacol. Life Sci., Vol 9[3] February 2020 :26-30