ECONOMIC OF BACKYARD POULTRY IN TEHSIL MATTA DISTRICT SWAT

MUHAMMAD TUFAIL*, MUHAMMAD SAJJAD*, MUHAMMAD ZULFIQAR**
SYED MUHAMMAD SOHAIL*** and IJAZ AHMAD***

* *Department of Agricultural Economics, Agricultural University, Peshawar – Pakistan.*
** *Agriculture University, Peshawar – Pakistan.*
*** *Department of Animal Breeding and Genetics, Agricultural University, Peshawar – Pakistan.*

ABSTRACT

This study examined the economic of backyard poultry production in rural areas of Tehsil Matta District Swat in 2006 (study year). The basic objective of the study was to determine the profitability of backyard poultry production. Primary and secondary data were collected during the study; primary data through personal interview with the respondents (farmers), using well-structured questionnaire. Descriptive statistics such as tables, frequency distribution, and percentages were used to present the socio-economic characteristics of the poultry farmers. The analysis showed that 30 per cent of the respondents were males and 70 per cent were females. OLS estimation technique was used to estimate the cost function . The coefficients of the estimated cost function is the elongated S-shaped and hence consistent with the cost theory. From the value of the coefficient of determination (R^2) it can be said that the cubic model is the best fit and the independent variable (output of bird) explains 90% variation in total cost. Also the profit model was used to determine the impact of price per egg, price per bird and cost per bird. The model suggests that the price per egg and price per bird are statistically significant while the cost per bird was statistically non significant. Finally it is recommended that high producing strains like Fayumi and RIR be introduced for improving the production performance of household poultry. Also Government may encourage private sector for availability of balance feed in the study area to boost productivity of the backyard poultry farming.

Key Words: **Economic, Poultry, Backyard and Swat.**

Citation: Tufail, M., M. Sajjad, M. Zulfiqar, S.M. Sohail and I. Ahmad. Economic of backyard poultry in Tehsil Matta, District Swat. Sarhad J. Agric. 28(3):485-492

INTRODUCTION

The term backyard chicken production designates poultry birds which are reared on small scale by a household. In this type of poultry rearing, usually a few birds are kept primarily for family use. The surplus birds and eggs are sold in the village or nearby market and the cash earned is utilized for fulfilling other needs of the household. This is a common practice in the rural area of Pakistan. Qureshi (1985) reported that 70 percent of the rural families in Pakistan were keeping 10 to 12 chicken either for family consumption or as a small income generating unit. Backyard chicken production is an important aspect of poultry farming on small scale. Rural poultry is efficient converter of non-edible kitchen wastes and other crop wastes into high quality food for man. Backyard household chicken production is very popular in many parts of the world, particularly in the developing countries, where most of the population resides in rural areas. Bessei (1989) reported that in most of the third world countries, poultry was kept on small farms under extensive management system which considerably contributed to the cash income of the rural families.

Poultry production has emerged as a good substitute of beef and mutton. Its importance can be judged from the fact that according to Livestock Wing of Ministry of Food, Agriculture and Livestock almost every family in rural areas and every fifth family in urban areas is associated with poultry production activities in one way or the other (Govt. of Pakistan, 2004). In Pakistan, prior to the establishment of commercial poultry sector, household poultry was the only source of eggs and poultry supply. Although, commercial poultry sector has expanded with a rapid speed during the last three decades and highly productive birds have been imported for boosting production, yet rural poultry has not lost its value. Rural poultry is still a significant source of egg production in the country. In 2003-04 there were 43.9 million birds, including 34 million layers and 9.9 million cocks and cockribs, which produced 3397 million eggs in comparison to 4850 million eggs from 22.1 million layers in commercial sector (Govt. of Pakistan 2003-04). Meat contribution of rural poultry during 2003-04 was 99000 tons as compared to 303000 tons from commercial poultry production. Keeping in view the very low cost of producing rural poultry, the net return from rural poultry could be several times more than that of birds produced on commercial scale. Contribution of rural poultry to household economy could be further enhanced through genetic improvement of the rural birds, in addition to their feeding, management and health status.

Tehsil Matta of District Swat is considered as the far-flung area of Khyber Pakhtunkhwa. People of the area are mostly dependent on rural poultry production. Because of its climatic conditions animal production and crops growing schedule changes from place to place. Being remote area with meager marketing facilities, commercial poultry production has not been well established in the study area with the exception of a few small scale commercial farms established recently. Poultry is maintained throughout the area in small fragments for rural purposes. The population of Tehsil Matta is 251368. The total geographical area is 62497 hectare, out of which only 25383 hectare is cultivable whereas the rest of the land is either under mountains/water/forests etc. The average land holding per household is 1.7 hectare (Govt. of Pakistan, 2002). Majority of the inhabitants are landless. For these landless/poor people livestock in general and poultry in particular is the important source of earning. Since tehsil Matta mainly comprised rural areas, where majority of the people are dependent on livestock and poultry. Poultry production is one of the significant source of income because of rapid turnover and higher returns. The present study is therefore planned to investigate economic status of rural poultry in this neglected pocket of Khyber Pakhtunkhwa. The importance of relative factors will also come up with certain recommendations for better returns. Also, the study will be much useful for devising strategies for optimum productivity from the backyard chicken production in the study area with the following objectives.

Objectives of the Study

i. To estimate return from backyard poultry in the study area.
ii. To study various factors affecting income of backyard poultry farming.

MATERIALS AND METHODS

This section discusses the methodology used for the study. It includes universe of the study, sample size, data collection and analysis for estimating the costs and net returns of backyard poultry. The impact of different variables on the total cost of the backyard poultry production were also studied. Details of the materials used to reach the conclusions are explained below.

Universe of the Study

The study was conducted in Tehsil Matta Distt. Swat, Pakistan. Agriculture is the main occupation in the study area. Most of the farm families are small land owners. They grow crops as well as keep livestock and poultry. Main crops are wheat, maize and rice while livestock includes cows, buffaloes, sheep, goats and domestic poultry bird. Horticultural crops like apple, peach, persimmon, apricot, plums are also grown in the study area.

Sampling of the Study Area

Matta is fairly homogenous in respect of soil, climatic condition and farmer circumstances. Tehsil Matta comprised 322 villages, but due to financial and transport constrains, six villages from the study area were proportionally selected. The villages were Asharey, Kharerai, Aghal, Chamanlalai, Dedpani and Chuprial. The villages were selected randomly. The households in each of the village was also randomly selected. About 80 respondents were interviewed through a model questionnaire.

Proportional Sampling Allocation Technique

The proportional allocation sampling technique was used to get the required sample size of 80 respondents at the rate of 1.56 percent from the above six villages of Tehsil Matta. The proportional sampling allocation method is get from S.M. Chaudhry, 1997, p.18.

$NI = n/N * Ni$

Where

NI	=	No of the sampled respondents in each village
I	=	No of villages in the study area i.e. is 1, 2 …6
n	=	Total sample size
Ni	=	Total No of household in each village
N	=	Total No of household in the research area

The number of sample respondents in each village selected in the present study is given in Table-I

Table I *Number of respondents in each village*

Villages	No of households	Sample size
Kharerai	1351	22
Dedpanai	600	10
Chuprial	1408	22
Chamanlalai	375	6
Aghal	704	11
Asharay	595	9
Total	5033	80

Source of Data

To collect data an interview schedule was designed to cover all relevant aspects of the study. The data were collected through interview schedule from the male respondents directly, while the female respondents were interviewed by a guided male member of the household, to whom each and every question was made clear.

Data Analysis

The data were analyzed to study the effect of initial flock raising cost (IFR), cost of cages, cost of feed and cost of vaccination incurred on the total cost. After collection of the data it was transferred into tally sheets and then punched into computer. Statistical Package for the Social Science (SPSS) was used for further analysis. The functional form of the analysis is given below.

Cost Analysis

Keeping in view the theoretical and empirical application of the cost function the following third degree polynomial was used to analyze the cost structure .

Where C = total cost, X is the level of output and βs are the parameters of total costs and Ui is the stochastic term.

$$C = \beta_0 + \beta_1 X_i + \beta_2 X_i^2 + \beta_3 X_i^3 + U_i$$

Estimation of Profit

The following econometric model was used to estimate the profit.

$\Pi = \beta_o + \beta_1 PE + \beta_2 PB + \beta_3 CB + ei$

Where,

Π = Profit (Net Revenue)
PE = Egg price (Rs./Egg)
PB = Bird price (Rs./Bird)
CB = Cost per bird (Rs./Bird)

RESULTS AND DISCUSSION

The results achieved during the course of study are presented as below:

Age of Respondents

Data shows that the average age of the respondents was 40 years ranging from 15 to 70 years. Most of the respondents (25%) were in the age group 45-55 years, followed by the age group 35-45 (20%) and 55-65 (20%), 15-25 (18.75%), 25-35 (13.75%) and 65 and above (2.5%).

Family Size of Respondents

Data shows that the average family size of the respondents in the study area was 9.5. The maximum family size was 23 and the minimum family size was 2 in the study area. About 52.5 % of the respondents were belonging to the family consisting of above 10 members.

Gender Status of Respondents

Result shows that over 69% of the respondents keeping rural poultry were women while 31% men. As most of the backyard poultry was kept by women but the involvement of the men was due to their hobby in the study area.

Educational Status of Respondents

The literacy level of the respondents was very low in the research area. Only 32.5 % of respondents were literate. Five percent literate had upto primary level education. 7.5 % each had upto middle and metric level education while 12.5 % were above metric.

Tenurial Status of Respondents

Data shows that the tenurial status of respondents. The owners were found 35% followed by owner-cum-tenants, tenants and landless farmers; 12.5, 16.25 and 36.25%, respectively.

Gross Income of the Sampled Respondents per Month

The data shows that 31% of the respondents were earning between 0-5000 Rupees per month, followed by 29% who got above 20000, 15 % got 1001-15000, 12.5 % each were earning 5001-1000 and 15001-20000 Rupees per month. The average income of the sampled respondent was Rs.11,452 per month. The maximum income was Rs.71,333 per month while the minimum was Rs.875 per month.

Poultry in the Study Area

Poultry is an important part of agriculture. In the study area due to small land holdings farmers keep poultry to supplement their family income. Generally they keep chickens to sell poultry products and earn additional income for their families. Thus poultry contributes towards the improvement of socio-economic conditions of the people. Generally they keep 10-12 birds primarily for their family consumption in the form of eggs as a food. While the additional is sold to earn cash income.

Number of Birds Kept by Household

Table II shows that the average number of birds kept by household was 12 in the study area. 39% of the respondents had 10 to 20 birds, followed by 34% of the respondents who have 5 to 10 birds, 14% have 20-30 birds, while 10% have less than 5 birds and in the last 1% have above 40 birds. While in district Chitral average flock size was 23.14+5.16 (M. Shakir, 1999) which is much higher than the findings of the present study. The reason for tendency of smaller flock size may be the socio-economic conditions of respondents of Tehsil Matta, who seem to be less dependent on backyard poultry as their livelihood.

Table II *Number of birds kept by household*

Flock Size	Number	%age
Less than 5	8	10
5 to 10	27	34
10 to 20	31	39
20 to 30	11	14
30 to 40	2	3
40 and above	1	1
Total	80	100

Purpose of Rearing Birds

Table III shows the purpose for which the birds were kept by the sample respondent in the study area. Respondents who kept birds for own consumption were 45%, 37.5% were birds for commercial purpose and 17.5% of the respondents kept birds as a hobby and for exhibition purposes.

Table III *Purpose of rearing birds*

Purpose	Number	%age
Commercial	30	37.5
Family Consumption	36	45
Hobby	14	17.5
Total	80	100

Types of Birds Kept

Table IV shows that the main type of birds kept by the respondents in the research area was Desi 75.1 % followed by Fayomi 12.5 % and RIR 8.77%, respectively. The fancy birds were found 3.63 % were kept in small fragments as a hobby and for exhibition purpose. Furthermore 9.97 % of birds were male, 56.04 % of birds were layers (egg laying birds), 20.19 % of birds were pullets and 12.19 % of birds were chicks.

Table IV ***Types of birds***

Types	Adult Birds(M)	Adult Birds(F)	Pullets	Chicks	Total No. Breed wise	%age
RIR	12	47	28	-	87	8.77
Fayomi	2	81	41	-	124	12.5
Desi	74	423	137	111	745	75.1
Fancy	11	15	-	10	36	3.63
Total	99 (9.97%)	566 (56.04%)	206 (20.19%)	121 (12.19%)	992	100

Source of Flock Raising

Table V shows that fifty five percent of the respondents in the research area raise their own flock, 42.5 % purchase small pullets from market which were then raised to adult birds while 2.5 % get birds from their friends and relatives.

Table V ***Source of flock raising***

Source	No	%age
Own Flock	44	55
Market	34	42.5
Friends	2	2.5
Total	80	100

Housing Types for Poultry Birds

Table VI shows that 51.25 % of the respondents in the study area used cages for their birds keeping, 27.5 % used night shelter while 17 % used none of the housing for their birds and they used to live in trees and in open places.

Table VI ***Housing types for poultry birds***

Housing Types	Number	%age
Cages	41	51.25
Night Shelter	22	27.5
None	17	21.25
Total	80	100

Productions of Eggs Breed wise per Year

Table VII shows the production of eggs breed wise per bird annually. The highest production rate was that of Fayomi 145 eggs per year, followed by RIR type which was 141 eggs per year, 123 eggs per year was produced by Fancy type and in the last the Desi type produced 115 eggs per year

Table VI ***Productions of eggs breed wise per year***

Breed Types	Annual egg production
RIR	141
Fayomi	145
Desi	115
Fancy	123
Average egg production per year	131

Health Coverage

Table VIII shows two categories of the sampled respondent. First category include those respondents who used vaccine for poultry as a precautionary measure for disease outbreak, while the second category include those respondents who do not used vaccination. The first category consists of 49% of the total respondents, while the second category consists of 51% of the total respondents.

Table VIII ***Health coverage***

	Categories	Number	%age
1.	Respondents using vaccine for poultry	39	49
2.	Respondents not using vaccine for poultry	41	51
Total		80	100

Mortality Breed wise per Year

Table IX shows the mortality breed wise per year. The highest mortality rate was that of Fancy type 55.55%, Non descriptive type was 29.58%, Fayomi was 25.75% and RIR was 17.12% mortality rate. The overall mortality rate of all the breeds was 29.69%. Chicks were more vulnerable to mortality.

The high mortality rate shows that the respondents do not used proper vaccination and the housing facility for poultry was not sound. These results are inconsistence with the study of Kelly (1994).

Table IX ***Mortality breed wise per year***

Breed Types	Mortality in Number/year	%age
RIR	18	17.12
Fayomi	43	25.75
Non Descriptive	313	29.58
Fancy	45	55.55
Total	419	29.69

Intensions towards commercialization

Table X shows two categories of the sampled respondent. First category includes those respondents who have intention towards commercialization, while the second category includes those respondents who have no intention towards commercialization. The first category constitutes only 16% of the total respondents, while the second constitutes 84% of the total respondents.

Table X ***Intensions towards commercialization***

	Categories	Number	%age
1.	Number of Respondents who have intention towards Commercialization	13	16
2.	Number of Respondents who have no intention towards Commercialization	67	84
Total		80	100

Gross and Net Revenue (Rs. per bird per year)

Table XI shows the gross and net revenue per bird. The gross revenue per bird was Rs. 227.89, from which Rs.219.23 comes from egg production which is about 96.2 % of the gross income. While Rs.8.6292 which comes from the sale of birds and which contributes 3.8% of the gross income. The total cost per bird per year was Rs.79.23. While net revenue per bird was Rs.148.66 per year.

Table XI ***Gross and net revenue (Rs per bird)***

Particulars	Total	Net Revenue Per Bird
Egg production	217482.18	219.23
Bird production	8590	8.65
Gross Revenue	226072.18	227.89
Total Cost	78605	79.23
Net Revenue	147467	148.65

Cost Status

Table XII shows the total cost incurred on each bird per year, which was Rs 79.24. The initial cost for flock raising per bird was Rs 37.58 which constitute 47.43% of the total cost. The cost of cages was Rs 27.32 per bird which was 34.4% of the total cost. The cost of feed per bird was Rs 8.85 which was 11.17 % of the total

cost. In the last the vaccination cost was Rs 2.76 which was 3.48 % of the total cost, while the managerial cost was Rs.2.72 which was 3.43% of the total cost.

Table XII ***Cost status***

Item	Unit	Total Cost	Cost/bird	% Cost
Initial Cost for Flock Raising	Rs	37285	37.58	47.43%
Vaccination	Rs	2740	2.76	3.48%
Feed	Rs	8780	8.85	11.17%
Cages	Rs	27100	27.32	34.4%
Managerial cost		2700	2.72	3.43%
Total	Rs	78605	79.23	100%

Major Determinants of Cost of backyard poultry

The cost function was estimated using the ordinary least square techniques. The results of the analysis are reported below:-

$C = 21.7 + 0.15X - 0.35X^2 + 0.29X^3$

$R^2 = 0.79$, $F = 15.214$

The coefficients of the estimated cost function had the signs anticipated, and when graphed, the total cost curve is elongated S-shaped and hence consistent with the cost theory. From the value of the coefficient of determination (R^2) it can be said that the cubic model is the best fit and the independent variable (output of bird) explains 90% variation in total cost.

Estimation of Profit

We postulate the following profit function to examine which of the aforementioned determinants significantly affect the profit.

Π = f (PE Rs., PB Rs., CB Rs.)

Where

Π = Profit (Net Revenue)

X1 = PE = Egg price (Rs./egg)

X2 = PB = Bird price (Rs./bird)

X3 = CB = Cost per bird (Rs./bird)

We estimated the above model and get the following results.

$\Pi = \beta o + \beta 1\ PE + \beta 2\ PB + \beta 3 CB + ei$

$\Pi = 12.12 + 99.121\ PE + 3.32\ PB - 2.37\ CB + ei$

S.E. = [55.38] [2.49] [2.08] [0.075]

t-ratio = (0.219) (39.77) (1.95) (-0.361)

The above estimated model gives us significant results. F-test determines the overall goodness of fit/signficance of the model. In this case as Fcal (1917.7) > Ftab (2.76) therefore, the model is overall significant. The co-efficient of determination $R^2 = 0.98$ interpret that 98 percent variation in dependent variable (Profit) is explained by the explanatory variables (Egg price, Bird price and cost per bird). The sign of the explanatory variables are in accordance with our prior expectations of the economic theory.

The co-efficient on which profit depend are egg price, bird price and cost per bird. As t cal (39.77) > t tab (1.67) in case of egg price and bird price so it means that the model is individually statistically significant in the above case while in case of cost per bird as t cal < t tab so it is non significant. Both the results are in accordance with our prior expectations of economic theory and shows the validity of the model.

CONCLUSION AND RECOMMENDATIONS

Backyard chicken production is an important aspect of poultry farming on small scale. In backyard poultry rearing, usually a few birds are kept primarily for family use. The surplus birds and eggs are sold in the village or nearby market and the cash earned is utilized in household economy. This practice is common in about 2/3rd of rural families in our country mostly for family consumption and as a small income generating unit. The present study was conducted in the rural areas of Tehsil Matta district Swat, where majority of people are dependent on livestock and poultry. The main objective of this research was to investigate economic status of rural poultry in the study area. After compilation of the data we can concluded that backyard poultry farming is commonly practiced in our rural area, mainly for family consumption and as a small income generating unit. The caretakers of the birds are mostly females. The average number of birds kept are 12. In the rural areas the non descriptive type birds are mostly reared due to its easy availability and its adoptability to the climatic

conditions. The highest egg production rate was that of Fayomi but it was not easily available in the local market. Mostly the respondents had no intention for commercialization.

On the basis of results of the research study following recommendations are forwarded.

i. Flock size should be increased to ensure higher productivity.
ii. High producing strains like Fayumi and RIR be introduced for improving the production performance of household poultry.
iii. Disease prevention measures particularly vaccination programme be expanded to the remote areas to reduce mortality in poultry.
iv. Female respondents should be trained and educated through female extension workers to achieve optimum results. Although the egg production performance of the rural poultry was optimum in meager resources or no resources at all, but still there is a room to improve their production potential.
v. Opportunities should be provided from the government and non-governmental organization for commercialization of backyard poultry so as to increase the income generation from it.
vi. Government may encourage private sector for availability of balance feed in the study area to boost productivity of the backyard poultry farming.

REFRENCES

Bessei, W. 1989. The problems of extension in rural poultry production in developing countries. Poultry Archiv-fuer-Gefluegelkunde (FR, Germany) (53). 3: 101-107.

Chaudhry, S.M. 1997. Introduction to statistical theory. Ilmi Kitab Khana, Kabir Street, Urdu Bazar, Lahore 5400, Pakistan Part-2. 18p.

Govt. of Khyber Pakhtunkhwa. 2002. Agricultural Statistics of Khyber Pakhtunkhwa. Bureau of Statistics, Govt. Khyber Pakhtunkhwa, Swat.

Govt. of Pakistan. 1999. District Census Report of Swat. Population Census Org, Statistic Div. Islamabad, Pakistan. 39: 196-197.

Govt. of Pakistan. 2004. Agricultural Statistics of Pakistan. Ministry of Food, Agric. and Livest. Wing, Islamabad.

Kelly, P.J., D. Chitauro, C. Rohde, J. Rukwava, A. Majok, F. Davelaar and P.R. Mason. 1994. Diseases and management of backyard chicken flocks in Chitungwiza, Zimbabwe. Avian Dise. 38(3): 626-629.

Qureshi, M.S. 1985. Annual Report of Poultry. Res. Inst. Rawalpindi. Pakistan. 26p.

Shakir, K., M.A. Mian, M. Syed and M. Farooq. 1999. Contribution of backyard chicken to rural household economy in Chitral. M.Sc. (Hons) Animal Husb. Thesis. Agric. Univ. Peshawar, Pakistan.