

Contribution of poultry farming to livelihood of rural families in Nepal: A case study of Dailekh District

ABSTRACT

The present study aims to investigate the employment and income generation of small farmers through family poultry. The objectives of the study confined (1) to identify socio economic features of family poultry, (2) to examine the impact of family poultry on household improvement, to determine cost, return and profitability of family poultry, (3) to identify the problems faced by family poultry farmer and for its improvement. The data were collected from 60 family poultry farms from Naumule Rural Municipality of Dailekh district through semi-structured questionnaire interview. The result of this study showed that average gross return, total cost and net return of family poultry households were Rs.1,26,000, Rs. 73,000 and Rs. 53,000 respectively and benefit cost ratio was 1.72. Family poultry farming brought positive changes in different types of livelihood indicators as family income, family savings, employment status, food security and daily protein intake, drinking water and sanitation, and overall development. It also generated on average 92.5 working man days per year per households as employment opportunity. This study also identified some economic problems, marketing problems, technical problems, social and natural problems and their provable solutions. Household assets and health status of family poultry were also improved. Thus, family poultry has positive and significant impact for improvement of rural livelihood. However, poor management conditions and poorly developed marketing structures are problems faced by family poultry farmers. This study recommends enhancing skills of family poultry farmers through trainings and educations, provide credit or loan facility for establish of this enterprise, and should improved marketing system.

Key words: Family Poultry, livelihood, small farmers, Employment opportunity

INTRODUCTION

In Nepal, the poultry sector is also an integral part of the farming system. Poultry meat is the fastest growing component of global meat production, consumption and trade. Agriculture is the major sector of Nepalese economy and more than 65% of the population depends upon agriculture (Krishi dairy, 2011-12, Animal population and production. Agriculture information and communication center). Contribution of Agriculture sector in Gross Domestic Product (GDP) of Nepal is 33% (MoAD, 2016). Among them, contribution of livestock sector in total GDP is 26.8% and poultry sub sector within livestock contributes 8% of Agriculture Gross Domestic Product (AGDP) and indigenous poultry is widely prevalent which contributes 55% of total poultry population (status of Backyard poultry in Nepal, 2011 and Ministry of Livestock development, 2015, organization structure, present condition and commitment).

As **most of** the developing countries of the world, poultry production in Nepal varies from the free-range scavenging system to intensive system (Abington and Clitch, 1993). Starting from 1970 AD to 2014 AD the commercial poultry of Nepal has spurting of waves with 1.68

million table eggs/ day, a million broiler chicks per week and 0.4 million KG of chicken meat per day but the trade is not worth mentioning (Kaphle, 2014). The size of poultry population has significantly increased in the recent years and the present population of the laying hens is 8233616 (statistical data from MoAD, 2013), the meat production from poultry farming is 42810 metric tons (MoAC, 2012; 2013). It is estimated that over 1594,400 households are rearing poultry birds (CBS, 2010). Poultry farmers have better economic opportunity. It gives also employment opportunity to women and rural people (Sharma, 2010). Household nutrition and food security is strongly supported by availability of poultry in the household (Fattah, 1999; Sonaiya, 2007).

Family poultry plays an important role in improving livelihood, food security and poverty alleviation in rural and semi-urban community. Family poultry has also been playing an important role in improving livelihoods of the farmers. Poultry is an important source of animal protein which can add significantly to household's protein intake (Mallia, 1999; Permin et.al, 2001; Walker et. al., 2005). Poultry meat is an excellent source of protein. Family poultry ensures the availability of poultry meat to the rural poor who suffer from mal nutrition. Poultry meat is cheaper than buff, mutton and pork. The poultry meat is also digestible with less fat comparatively with other animals. Family poultry provides balance protein and income opportunities for the families throughout the year.

In most of the developing countries, livestock raising plays valuable roles in human food and nutrition security, livelihood improvement, gender mainstreaming and poverty alleviation (ILO, 2004). Livestock especially poultry farming contributes significantly to the welfare of people at household and national level. Among poultries, family poultry raising is common in rural areas. In Nepal, there are four types of poultry production system namely as free-range system or traditional village system, backyard or subsistence system, the semi-intensive system and intensive husbandry system. Majority of family poultry farmers adapted the free range, backyard and semi-intensive system where normally poultry breeds are local as Shakini, Ghati khuile and Pwakh Ulte. These local breeds are usually raised with domestic animal pigs, goat, cow and buffaloes. In rural areas, family poultry production is mainly based on traditional extensive poultry production system especially free range and backyard system. This production system is low input low output husbandry system that has been a traditional and integrated component of rural community. Most birds are kept in small flocks under a scavenging system with household waste feeding generally homestead picking and crop residues. Very few cases in intensive husbandry system especially practiced on broiler and layer farming for commercial production system. Free range system is also overlapped with feed supplementation and Backyard system is overlapped with night confinement without feeding. Local hen productivity is low and losses due to incidence of disease and predator animals, lack of supplementary feeding and inappropriate breeds. The contribution of poultry industry is significant. The family poultry is also appropriate to fight against poverty for those families who has minimum land, short capital and little skills. In Nepal, the poultry sector is also an integrated part of the farming system. Poultry meat is the fastest growing component of global meat production, consumption and trade with developing and transition economies playing a leading role in its expansion. Meat is an excellent source of protein. Family poultry ensures the availability of poultry meat to the rural poor who suffer from mal nutrition. It is generally accepted by all caste and religion. The poultry meat is also digestible with less fat comparatively with other animals. Family poultry production provides balance protein and income opportunities for the family. For the livelihood improvement of resource poor families, small scale family poultry plays a key role by providing balance diet

and creating income opportunities. Family poultry helped for improvement of livelihood pattern by maintaining balance nutrition among their children (Kattel, 2016). Under this circumstance, the study was done to identify the socioeconomic features of family poultry, to examine the impact of family poultry on livelihood improvement, to identify the problems faced by family poultry farmers and for its improvement.

MATERIALS AND METHODS

The study site and Sample

The present study was conducted in Naumule Rural Municipality of Dailekh district. In the study area, 60 households were selected purposively because family poultry farming is common and practiced poultry farming in traditional way in their households. These 60 households were selected for questionnaire interview and data generation.

Techniques of data collection and Analysis

The present study was conducted in Naumule Rural Municipality of Dailekh district. In the study area, 60 households were selected purposively. This study area is representative in all social, economic and cultural variables. Family poultry households are the key source of the primary data. Primary data were collected from the sample respondent households by direct interview methods using a pre-tested semi-structured interview schedule during the month of December 2018. Besides, the information obtained through semi-structured interview schedule. The information collected from the field survey was coded first and entered into excel.

Data entry and analysis was done using computer software package Statistical Package for Social Science (SPSS 16 version), Microsoft Excel for descriptive statistics. Correlation analysis was done to see the relation between variables and their significance level. As analytical tool, tabular technique was used to calculate profitability, gross return, net return and total cost. Simple descriptive statistical measures such as mean, standard deviation, frequency count, average, percentage were used for categorization and calculation of data. Describing the impact of selected independent variables (bird cost, feed cost, labor cost, medicinal cost, transportation and marketing cost) on gross return multiple regression analysis (Cobb Douglass Production function) was employed.

RESULTS AND DISCUSSION

To examine the impact of family poultry farming on the livelihood improvement, it is necessary to know socioeconomic characteristics of family poultry farmers. Some socioeconomic characteristics are types of land holding capacity of family poultry farmers and occupational status as discussed in the following sections.

Type and size of land holding by poultry farmers:

From the Table 1, it is evident that 87 % poultry farmers have their own land and 10% are renting land for their poultry production. Only 3% farmers have rented out their land to others.

Table 1. Land information of the family poultry farmers

Land type	Number of households	% tage
Own land	52	87
Rented in	6	10
Rented out	2	3
Total	60	100

Source: Field survey, 2018

Occupational status of the family poultry farmers:

The main occupation of the respondents in the study area is agriculture 50% and business constituted 20 %. Service and others constituted 12% and 18% respectively (Table 2). Other occupation means labor work in road construction, fire wood collection and selling in near market. In case of subsidiary occupation, family poultry farming was chosen by 100% respondents that all the farmers are involved in family poultry farming.

Table 2. Occupational status of the family poultry farmers

Name of the Occupation	Main		Subsidiary	
	Number	Percentage	Number	Percentage
Business	12	20		
Agriculture	30	50		
Family Poultry	0	0	60	100
Services	7	12		
Others	11	18		
Total	60	100	60	100

Source: Field Survey, 2018

Income generation

In this study, cost and return was estimated for 60 family poultry farmers and then average value was calculated. Average total cost was Rs. 73,000 and net return was Rs. 53,000 per year. Benefit cost ratio was 1.72 which indicate that family poultry farming is profitable business. Income generation is the primary goal of family poultry farming. The cost and returns were calculated to analyze income generation from family poultry farming. Family poultry farming consists of different types of cost and returns. Cost are two types, one is variable cost includes bird cost, feed cost, labor cost, Medicare cost, transportation and marketing cost, interest on operating capitals and other cost is fixed cost consists depreciation on housing and depreciation on tools/equipment. Returns consists of birds/egg sold, home consumed, poultry manure sold and present stock value. Bird purchasing and feed purchasing cost are primary cost for family poultry farmer which varies from one family to another based on size and number of birds. Annual average feed cost was around 41% and it is major cost of family poultry production system (Table 3). Return items consists of value of birds, eggs and manure sell. It also includes present stock and home consumed value also. Average live weight price is Rs. 250 and Rs. 600 for per KG of Broiler and per KG of local chicken.

Table 3. Annual Average cost and return of family poultry farmers

Cost/Return	Particulars	Amount Rs.	% tage proportion for each items
Variable Cost (VC)	Bird cost	8000	11
	Feed cost	30000	41
	Labor cost	15000	21
	Medicare cost	2000	3
	Transportation and marketing cost	6000	8
	Interest on operating capital	3000	4
	Sub total	64000	88
Fixed Cost (FC)	Depreciation on housing	6000	8
	Depreciation on tools and equipment	3000	4
	Sub total	9000	12
Total Cost (TC)		73000	
Return	Bird and egg sold	61000	48
	Bird and egg consumed	25000	20
	Manure	10000	8
	Value of present stock	30000	24
	Gross Return (GR)	126000	100
Gross margin (GR- VC)		62000	
Net Return (GR-TC)		53000	
Benefit Cost Ratio (GR/TC)		1.72	

Source: Field Survey, 2018

Functional Analysis

Cobb-Douglas production function was employed to investigate the factors affecting production of family poultry through production function analysis because in the Cobb-Douglas production function, the regression coefficient directly represents production elasticities and as all the sum of the production elasticities indicates whether the production process as an increasing, constant, or decreasing return to scale.

Table 4. Estimated values of coefficient and related statistics of Cobb-Douglas production function

Variables	Estimated Coefficient	Std. Err.	t-statistic	Level of Sig.
Feed cost	-1.945**	0.601	-3.23	0.002
Medicare cost	0.518**	0.194	2.67	0.010
Labor cost	1.334**	0.464	2.87	0.006
Transportation and marketing cost	0.428*	0.219	1.96	0.056
Constant	12.198	1.110	10.90	0.000

R-squared	0.242			
Adjusted R squared	0.187			
F-value	4.40			
Returns to scale	0.335			

** Significant at 1 percent probability level, * Significant at 5 percent probability level.

Source: Field survey and author's estimation, 2018

In Table 4, the estimated coefficients of the Cobb-Douglas model on feed for family poultry farming was negative at 1 percent level of Significant while the regression coefficients of Medicare and labor for family poultry were positive and significant at 1 percent level of significant. Transportation and marketing for family poultry was positive and significant at 5 percent level of significant.

One percent increase in feed cost keeping other factors constant would result in decrease the gross return by 1.945 percent for family poultry farming indicated by the result of the analysis. One percent increase in Medicare cost and labor cost keeping other factors constant would result in increase the gross return by 0.518 and 1.334 percent for family poultry farming respectively. The transportation and marketing cost have positive effect on production, but in the study area farmers usually have little transportation and marketing cost.

Employment generation

Family members of family poultry farming households generally involved in family poultry production. It provides employment to family members all the years. It was reported that they spent 2 - 4 hours per day for feeding and nurturing family poultry. Table 5 reveals that after family poultry farming, on average 92.5 man-days in a year employment opportunity was generated.

Table 5: Average of additional employment opportunity from family poultry farming

Time period	Addition of working man days a year
After involvement in family poultry farming	92.5

Field Survey: 2018

Impact analysis on livelihood improvement of family poultry farming

The aim of this section is to present impact on livelihood improvement after family poultry farming. The key objective of this section is to determine the changes in different types of livelihood assets, food intake, health and sanitation. Livelihood framework identifies core assets of capital upon which livelihoods are built. These assets are financial assets, physical assets, health and sanitation. Financial resources as income and savings are financial assets. The household's goods, tools, equipment and physical infrastructure are physical assets. Livelihood of family poultry farmers greatly influenced by health and sanitation facilities. Table 6 indicated that saving and income of family poultry farmers increased by 40 % and 70% respectively. Similarly, furniture and agriculture equipment increased by 42 % and 67% respectively. Drinking water, sanitation and medicinal facility were also increased by 42%, 47% and 67% respectively through family poultry farming.

Table 6. Changes in financial assets, physical assets and health and sanitation condition

Particulars	Degree of change			
	Increased		Unchanged	
	Number	Percentage	Number	Percentage
Financial Assets				
Savings	24	40	36	60
Income	42	70	18	30
Physical Assets				
Furniture	25	42	35	58
Agriculture equipment	40	67	20	33
Health and sanitation				
Drinking water	25	42	35	58
Sanitation facility	28	47	32	53
Medicinal facility	40	67	20	33

Impact analysis for family poultry farming

This study helped to identify how family poultry farming bring a significant change in any family. Table 7 showed that the family poultry farmers had an opportunity to increase family income, savings, employment opportunity, daily protein intake, better health and sanitation. They also have positive attitude for investment facility.

Table 7. Impact family poultry on the households

SN	Particulars/facilities	Family poultry keepers	Percentage
1	Family Income	Increase	70
2	Family Savings	Increase	40
3	Employment Status	Increase	25
4	Family Education level	Increase	15
5	Food Security & daily protein intake	Increase	55
6	Socioeconomic status	Increase	28
7	Knowledge and skill	Increase	70
8	Social Security	Increase	35
9	Women Empowerment	Increase	60
10	Self-Dependency	Increase	72
11	Recreational Facilities	Increase	26
12	Furniture/ Tools/ Equipment	Increase	54
13	Disease Attack	Decrease	40
14	Drinking Water	Increase	42
15	Medicinal Facility	Increase	67
16	Health and Sanitation Facility	Increase	47
17	Investment Attitude	Increase	30
18	Overall development	Increase	52

Problems in family poultry farming

This study identified some problems and constraints associated with family poultry farming. These problems were categorized as economic problems, social and natural problems, marketing problems and technical problems. Lack of capital, high price of feed, outbreak of disease, predatory animals, lack of marketing system or structure, and housing problems were the main problems for family poultry farming.

Table 8. Problems faced by the family poultry farmers

Problems	Number of responding farmers (N=60)	Ranking
Economic problems		
Lack of capital	48	1
High price of feed	40	2
Price fluctuation of birds	35	3
Lack of credit institutions	30	4
Social and Natural problems		
Problems of theft	15	4
Outbreak of disease	46	1
Environmental pollution	20	3
Predatory animals	30	2
Marketing problems		
Lack of competitive market	50	1
Lower price of meat/egg	30	3
Lack of proper market access	35	2
Lack of insurance agent for loss/theft	25	4
Technical problems		
Housing problems	40	1
Lack of training facilities	25	3
Lower quality of chicks	20	4
Inadequate vaccine / medicine	30	2

CONCLUSION

Family poultry can create a great opportunity for the rural women and youth in income generation. Socio economic development can be achieved with the help of family poultry farming. There is a wide scope for development of family poultry farming in the country because rural poor women have enough time for rearing family poultry. It would be helpful for income generation, women empowerment, and nutritional improvement for the farm family. Extensive poultry production system especially free range and backyard system, the most practiced husbandry system represent sustainable, profitable and well adapted poultry farming could be progressively developed. Socioeconomic development can be achieved with the help of family poultry farming. There is wide scope for development of family poultry farming in rural areas because rural poor have enough time for family poultry farming. It is very helpful for income generation, nutritional improvement, and food security and poverty alleviation.

The study found that the benefit cost ratio of 1.72 from family poultry which indicated that family poultry rearing is profitable intervention and a yearly net return of Rs. 53,000. On average 92.5 -man days per year per family per year. Overall, it changed food security and daily protein intake, family income, family saving, family health and sanitation were

increased. Nowadays, family poultry faces economic, marketing, technical, social and natural problems. To solve these problems, enhancing skills by providing training and education, credit or loan facility for enterprise establishment, and should improve marketing system.

REFERENCES

- Abington JB, Clinch NJL. Problem identification and approach to sustainable development In: sustainable livestock production in the mountain agro-ecosystem of Nepal, FAO Animal Production and Health Paper, FAO, Rome (Italy). 1993;105:47-75.
- CBS. Statistical pocket book of Nepal. National planning commission, December 2010, pp: 47-48; 2010.
- ILO. A Fair Globalization: Creating Opportunities for All; Report of the World Commission on the Social Dimension of Globalization. *International Labor Organization*; 2004
- Kaphle, K. Poultry bubble of Nepal: Is it heading for burst? Nepal veterinary conference 28-30 May 2014, Kathmandu Nepal. 2014.; 14:27-28
- Kattel, P. Socio-Economic Importance of Indigenous Poultry in Nepal. 2016 *Poult Fish Wildl Sci* 4:153. doi:10.4172/2375-446X. 1000153
- Khishi dairy .Animal population and Production. Agriculture information and communication center; 2011-12.
- Mallia JG. Observations on family poultry units in parts of Central America and sustainable development opportunities, *Livestock Research for Rural development*. 1999;11(3). <http://www.cipav.org.co/lrrd/lrrd11/3/mall113.htm>.
- Ministry of Livestock development. Organization Structure. Present Condition and commitment; 2015.
- MOAC. Economic Survey for fiscal year 2013/2014. Economic Survey, Ministry of Agriculture and Cooperatives, Government of Nepal, Singha Durbar, Kathmandu, Nepal; 2014.
- MoAD. Statistical Information on Nepalese Agriculture. Monitoring, Evaluation and Statistics Division. Agri Statistic Section, Singha Darbar, Kathmandu, Nepal; 2016.
- MOAD. Statistical information on Nepalese Agriculture. Agribusiness Promotion and Statistics Division, Singha Durbar, Kathmandu, Nepal. 2013; 41-42
- Permin, A., Pedersen, G., & Riise, J. C. (2001). Poultry as a tool for poverty alleviation: Opportunities and problems related to poultry production at village level. In *ACIAR proceedings* (pp. 143-147). ACIAR; 1998.
- Sonaiya EB. Family poultry, food security and the impact of HAPI. *World's Poultry Science Journal*. 2007; 63(1):132-138
- Status of Backyard Poultry in Nepal, 2011
- Walker, T. L., Becker, D. K., Dale, J. L., & Collet, C. (2005). Towards the development of a nuclear transformation system for *Dunaliella tertiolecta*. *Journal of applied phycology*, 17(4), 363-368.