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POVERTY REDUCTION THROUGH STRENGTHENING BACKYARD POULTRY FARMING IN CENTRAL INDIA: AN ECONOMIC ANALYSIS

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ABSTRACT

Backyard poultry farming is a social phenomenon rather than an economic proposition. It is popular among the communities who have no inhibition against keeping birds, eating eggs produced and the meat. Keeping the importance of backyard poultry system in rural areas the present study was undertaken to examine the economic structure in relation to cost and revenue structures and income status of the sample poultry units. An estimation of imputed values of feed and labor, the value of eggs and meat has shown that backyard poultry is economically viable, socially acceptable of subsistence level of family needs devoid of business norms. If these ideas are exploited on large scale wonderful impact on farm income and employment opportunities are bound to accrue.

Keywords: *Poverty Reduction, Backyard Poultry and Central India*

INTRODUCTION

Nearly three-fourth of the farming community is categorized as marginal, small and landless laborers who constitute the bulk of the population living below poverty line. The vicious circle of poverty could not be broken even more than six decades of planned effort for bringing improvement in the living standard of the masses earning their livelihood through traditional pursuits. Livestock has been a built in component of the farming system throughout the world but its potentials have not been fully recognized and realized by majority of the farming communities. An average traditional farmer remains idle for four to six months per year following the tradition bound farming. Lack of gainful employment leads to loss of income and deep rooted poverty. Nutritional deficiencies problem is common among the poor's. Protein deficient diet based on cereals and pulses need to be supplemented by animal based protein sources for which poultry and poultry products are well known. Backyard poultry keeping is a social phenomenon which has more of family touch and very little or no business motives. The flock size is very small and managed as a supplementary enterprise without any worthwhile separate infrastructure and competitiveness in resource allocation and managerial efforts. There is a dire need to investigate the need oriented success which may be convincing to the local farmers. The problems of generating know how and its dissemination is universally recognized which is a great challenge to the researchers, policy makers and the prospective beneficiaries. The objectives of the study were to explore the contribution of backyard poultry in terms of income generation along with its economic structure and to determine the resource use efficiency of backyard poultry production.

MATERIALS AND METHODS

1) Sampling and Data Collection

The research was carried out in centrally located Jabalpur district comes under Kymore Plateau and Satpura hill agro-climatic region of the state of Madhya Pradesh. The district has an estimated population of 2460714 and lies between latitudes 79°59' E and longitudes 23°10'N. The annual rainfall is 1162 mm. while the mean annual temperature range between 4°C. to 47°C. It comprises seven development blocks namely Jabalpur, Panager, Sihora, Majholi, Kundam, Shahpura and Patan. Stratified proportionate random sampling was followed to select the poultry units for detailed investigation and accomplishment of the objectives. A sample of 50 respondents involved in backyard poultry production from each block which total to 350 (50x7) in number residing in and around block headquarter and further categorized into two groups viz Group I (Up to 10 birds) and Group II (more than 10 birds).

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The required data on cost and returns from backyard poultry units were collected by survey method and personal interview of respondents. The data pertains to agricultural year 2013-14. Thus, survey method of data collection and tabular analysis was adopted to derive empirical results.

II) Analytical Framework

a) Tabular Analysis

Tabular analysis was employed to work out the costs and returns of backyard poultry enterprise, profitability of egg produced.

b) Functional Analysis

Both Cobb-Douglas and linear production functions were employed to study the resource use efficiency on sample poultry units. Cobb-Douglas production function was found to be more appropriate than linear function as revealed by its better fit. As such Cobb-Douglas production function was applied to the input-output data to estimate the resource productivity and return to scale using the formula.

$$Y = a X_1^{b_1} X_2^{b_2} X_3^{b_3} X_4^{b_4} X_5^{b_5}$$

Where

Y= Output of backyard poultry (Rs.)

a= constant

X₁ = feed

X₂= Family size

X₃= Experience

X₄= Gender

X₅= Poultry owner age

b₁...-b₅ regression coefficient of X₁ to X₅ resources

Σbi= Return to scale

For testing the significance of regression coefficients t test was employed

$$t = \frac{b_i}{\text{SE of } b_i}$$

Where

b_i = Regression coefficient of input X_i

SE of b_i= Standard error of b_i

Simple average, cost of production, net income and Benefit-cost ratio, sensitivity techniques were employed to analyzed the collected data.

RESULTS AND DISCUSSION

Backyard poultry keeping is the traditional practice particularly among schedule caste and schedule tribes, landless labours and village craftsman. The system of keeping poultry bird is based on the natural instinct without any commercial touch. In modern terminology, it is not a supplementary proposition which competes for resources nor have a separate identity as a source of farm income. Backyard poultry is popular among the communities who have no inhibition against keeping birds, eating eggs product and the meat as per social and religious sanctions of the communities. An average number of non descript deshi birds range from 3 to 20 which are reared under home conditions picking their food from the surrounding supplemented by kitchen remains. Normally these birds survive under the natural conditions and have resistance to host of common poultry ailments. The eggs produced are mostly consumed by the family and the birds consumed in social ceremonies particularly offered to the goddesses as per their religious norms. The average number of eggs produced by each bird is extremely low often less than hundred per year. At present with wide spread market economy, the respondent have reported that they keep collecting the egg in a small earthen pot for a week and then disposed off on local weekly hats. There still likes for deshi birds and their eggs and thus earn Rs. 150 to Rs. 200 per week by selling them to local consumer.

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Infect, there is no established economic structure of backyard poultry system but certainly it is a part of the household economy supplementing nutritious diet with marginal monetary gains. In study area backyard poultry is more common among the lower caste categories dominate area where now there is some elements of income supplement in keeping the birds just enough to purchase biries, salt etc. Poultry meat is nobility for thus whenever the guests and local officials stay in their homes overnight. They are not paid for birds parted with but some fringe benefits are given by the regular visitors representing various agencies. Sometimes they are asked to keep the birds readily available during their next visits. The owners do it as they are compensated in many ways.

Table 1: Socio-economic features of sample respondents.

S.No.	Socio-economic variable	Frequency	Percentage
1	Age (Years)		
	Up to 30	22	06
	31-50	230	66
	51 and above	98	28
2	Gender		
	Male	90	26
	Female	260	74
3	Educational Status		
	i. Literate		
	Primary and Middle	189	54
	Higher Secondary	41	11
	Graduate & above	08	02
	ii. Illiterate	112	33
4	Marital Status		
	i. Married	304	87
	ii. Unmarried	06	02
	iii. Widow	40	11
5	Experience (years)		
	Up to 10	47	13
	11-25	84	24
	26 and more	219	53
6	Size of family		
	Small (up to 6 members)	69	20
	Large (more than 6 members)	281	80
7	Reason for embarking		
	i. to alleviate poverty and unemployment	292	83
	ii. Influenced by parent	58	17

The features of identified backyard poultry on the sample farm are:

- i) No inhibition for keeping and consuming poultry birds and eggs thus supplements food of household economy.
- ii) No additional cost but returns as bonus. It also helps in performing social and religious rituals.
- iii) It provides ample opportunity to women and children as a source of gainful employment.
- iv) Provide fertile ground to motivate and propagate poultry as an enterprise.
- v) Backyard poultry is a rudimentary to commercial units from social and economic point of views.

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- vi) Household ladies and children take care of backyard poultry.
- vii) Backyard poultry keeping is practical with a mission mode approach at subsistence level which is so essential for any enterprise to run efficiently.
- viii) Provide assured entrepreneurship if inputs supplied and product flows are made simple and village level.

Socio-economic Profile

The personal and socio-economic characteristics of the sample respondents were shown in Table 1 where majority of the poultry owners (78 %) were less than 50 years and the average age was 46 years and it is considered to be the active stage of production process and energetic to face the challenge of poultry production. All family members are participating in poultry production however women are the care takers of poultry indicating that this gender has enough time in taking good care of birds at home and more disposed to taking risk their male counter parts. More than (86 %) of the selected respondents were married indicating that married households were more involved in backyard poultry business. About one-tenth of the respondents are widow and solely depends on backyard poultry. More than half (53 %) of respondents had been backyard poultry farming from their ancestor indicating that respondents were well groomed and experienced in the enterprise.

Education accelerates growth and development of any business and results in changes in overall behaviors. Since it is the process of imparting or acquiring knowledge and habits through instruction. Over two-thirds of the respondents were educated and had at least primary level education. This is an incentive for adoption of innovation vis-a-vis development in the enterprise. Majority of the respondents (80%) had a large family size which has been a good source of work force needed for production activities in the study area.

Economic Structure

As regards the cost and returns of the backyard poultry keeping it is highly subjective and difficult to quantify because this system of poultry keeping is mixed up with households as a supplementary enterprise with returns as bonus. Only local/deshi breeds are common. Since there is virtually no establishment cost of backyard poultry only imputed value of family labour and feed fed to birds has been considered for calculating economic structure. Although the estimated costs and returns are very low, intangible gains are of special significance. Liking for the birds, diversification of dieting pattern, nutritional supplementation with pecuniary gains establish the utility of backyard poultry in rural areas particularly those who are below poverty line. Backyard poultry has no business tough but has a strong linkage with the family system and the social norms. It is a system which neither cost intensively nor profit oriented.

Table 2: Cost incurred in backyard poultry production on sample farm (Rs./bird)

S.No.	Particulars	Size group		Group II		Overall	
		Group I		Group II			
		Cost	Per cent	Cost	Per cent	Cost	Per cent
1.	Average no. of bird reared	6.00	—	19	—	12.38	—
2.	Depreciation value of shade	24.75	13.70	32.25	16.88	28.50	15.30
3.	Imputed value of (a)Labour cost	66.45	36.76	76.15	39.85	71.30	38.40
	(b)Feed cost	78.00	43.15	67.50	35.32	72.70	39.10
4.	Medicine cost	4.65	2.57	6.50	3.40	5.60	3.00
5.	Electricity charges	6.90	3.82	8.70	4.55	7.80	4.20
	Total Cost	180.75	100	191.10	100	185.90	100

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Table 2 shows that with poor resources base of poultry farmers, the investments on shade taken as its depreciation value was negligible irrespective of the birds' size. Investment on shade account to be Rs. 28.50 at the overall sample farm and it varied between Rs. 24.75 to Rs. 32.25 (14-17 percent of the total cost) on different size group. Thus, in absolute and relative terms cost on establishment of shades increase as the birds size group increased.

Since, there is virtually no establishment cost of backyard poultry only imputed value of family labour and feed fed to birds has been considered for estimating economic structure. In other words all the backyard birds were reared without readymade feed and prescribed feeding method with few expectations. Normally backyard poultry birds are desi breed which survive on food picking from surrounding supplemented by food left over. Imputed value of labour cost on an average was Rs. 71.30. Respondents of size group II invested more on labour (Rs. 76.15/bird/year) followed by size group I (Rs. 66.45).

Maximum investment on feed was recorded in size group I (Rs. 78.00 per bird/year) and lowest in group II (Rs. 67.50/bird/year), but the difference in investment per bird is negligible. On an average investment on medicine and electricity charges was Rs. 5.60 and Rs. 7.80 which varied between Rs. 4.65 to 6.50 and Rs. 6.90 to Rs. 8.70 respectively. Total cost incurred was Rs. 148.65 on overall level which varied between Rs.144.05 in size group I to Rs. 152.80 in size group II. Thus, total cost increased with an increase in number of poultry birds.

Table 3: Return from backyard poultry production o sample farm (Rs./birds)

S.No.	Particular	Size group		Overall
		Group I	Group II	
1.	Average no. of egg produced	138	148	145
2.	Average value of egg (10 Rs/egg)	1380	1480	1450
3.	Average value of culled bird	75	70	73
4.	Manure	19.15	14.35	16.75
5.	Gunny bags	6.90	6.5	6.65
6.	Gross income	1481.05	1570.85	1546.40
7.	Net income	1300.00	1379.75	1360.50
8.	Benefit cost ratio	8.19	8.22	8.32

A glance of the data from table 3 show that highest average eggs produced per bird per year was achieving by the size group II to the level of 148 eggs where as in size group I the production level was 130 eggs. The average per bird net income was Rs. 1360.50, it was Rs. 1300.30 in size group I as against Rs. 1379.75 in size group II. The cost-benefit ratio in the respective sizes was 8.19 and 8.22 and when all the farm of different sizes was pooled together the ratio obtained was 8.32. There was negligible difference in case of net income and benefit-cost ratio among difference size groups.

Poverty and unemployment are interlinked aspects of the society. The growing unemployment due to increased population on land has forced the government and the people to search for alternative jobs opportunities requiring less of land resource and more of capital and technological inputs. The backyard poultry is a good example of change in social behaviour of the people towards poultry and poultry products and practicing it as a supplementary enterprise which adds to the family income without competing for resources.

Resource Use Efficiency

Resource use efficiency means how efficiently the poultry owners can use his resources in production process. It is very important because resource is scarce. As shown in Table 4 the value of R^2 was 0.792 which indicated that 79% of the variations in backyard poultry output is being explained by the explanatory variables included in the model.

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Table 4: Estimated values of co-efficient of Cobb-Douglas production model

S.No.	Variable	Reg. Coefficient	SE _b
1.	Intercept	4.26	2.80
2.	Regression Coefficient of		
I)	Expenses on feed (X ₁)	1.35***	0.085
II)	Family size(X ₂)	0.14	0.71
III)	Experience(X ₃)	0.17***	0.048
IV)	Gender(X ₄)	0.04**	0.013
V)	Poultry owner age(X ₅)	-0.53	0.394
3.	Return to scale (Σb_i)	1.17	
4.	R ²	0.792	

** Significant at 5% probability levels

*** Significant at 1% probability level

Feed has the highest coefficient value of 1.35 significant at 1% probability level. It means that increase can be more experienced in income of backyard poultry by increasing quality and quantity of feed given to the poultry. Family size has positive and insignificant relationship indicating that backyard poultry depends on family member as labour and feed supply. Positive and significant relationship between gender and backyard poultry output suggest that efficiency is more among female than male. This may be due to the fact that women are more involved in backyard poultry and attributed to their tender nature as they stay more at home caring for poultry. The implication of this is that women may generate more income from backyard poultry than that of men. Experience is an important factor affecting the productivity of any enterprise. The experienced farmers could manage various practices in a better way. Table inferred that experience variable was significant at 1 percent level. As poultry keeping experience increases by one percent than poultry output will increase by 0.17 percent.

The sum of elasticity indicates return to scale viz, the percentage change by which the output would change due to one percent simultaneous change in all the resources included in the function. The rumination of the coefficient of included variables was 1.17 which means that the production function exhibit increasing return to scale. That is to say that the poultry owners are producing in the first stage of production.

Problems Reported by Respondents

(1) Poor Quality Bird

In these poultry units, it was found that 95 percent farmers reared local or desi bird with poor egg laying quality due to fall nation that desi bird and desi eggs are more nutritious and tasty than exotic bird. Only 5 percent of the farmers, residing near the town or cities preferred exotic bird for higher egg production.

(2) Inadequacy of Space

Regarding inadequacy of space problem it was found that only 5-10 percent of backyard poultry farmers had adequate space facility and proper feeding equipment.

(3) Lack of Technical Know how

As regards the unavailability of technical facilities know how only 10 percent of the poultry farmers residing either in urban area or nearby development center had some knowledge about technical know how about poultry.

(4) Awareness of Disease and Vaccination

In the absence of good and efficient veterinary services in the remote area backyard poultry is considered to be a risky business. Very few farmers (10 percent) were able to identify some common disease like Fufuondi and some other as deadly diseases.

(5) Marketing Problem

For smaller farmers marketing or sale of eggs and bird was not a problem because these units were very small and reared the birds either for home consumption or sell the produced in village itself. However bigger farmers, with 25-30 birds, experienced difficulties in selling eggs and birds.

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(6) Poor Feeding

Majority (80 percent) of the backyard poultry farmers feed their birds with broken grains like- rice, wheat, bajra etc. while 73 percent backyard farmers reported no investment on poultry feed. This ad-hoc feeding system could be a major contributor to undernourishment leading to unhealthy chicks and their high mortality as well as low egg production.

(7) Other Problems

Farmers (40 percent) also reported attack by predators like cat, dog, kite, snake etc. Theft was also reported by some farmers (20 percent) as a problem in backyard poultry.

Conclusion and Suggestions

Backyard poultry keeping is a social phenomenon rather than an economic proposition which has more of family touch and very little or no business motives. It needs to be exploited on large scale for full utilization of resources without additional overhead costs. It is congenial for development of poultry sector particularly in rural areas. The flock size is very small and managed as a supplementary enterprise without any worthwhile separate infrastructure and competitiveness in resource allocation and managerial effort. The optimality of small scale backyard poultry farming needs to be propagated to the extent that scale economies are reaped with additional productions, employment and income. Productive strains of birds are lacking in backyard system which keeps them of subsistence level devoid of commercial benefits. Backyard system of poultry farming which supplements the diet without consideration of the pulse of the purse. It has an advantage of being free from social inhabitation and every member of the family has linking for the birds which are kept for an ideal balance of nature and human behaviour.

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