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Case Study

Pattern of Rearing and Socio-economic Impact of Improved Variety Chicken Farming among Resource Constrained Communities in Tiruchirapalli District

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ABSTRACT

Habitually, Desi variety chicken is used for backyard poultry farming in many rural villages. It provides a source of protein, income and employment generation for poor people. Since, *desi* variety chicken had low production potential, improved varieties like Vanaraja and Gramapriya were introduced into the rural villages by Indian Council of Agricultural Research –Directorate of Poultry Research, in Hyderabad under Poultry Seed Project (PSP). During November 2021, 100 resource constrained community people of Tiruchirappalli were selected for this study and distributed with 50 numbers of improved chicken each. The study has been undertaken after the period of one year to know the pattern of rearing and socio-economic improvement in that community after rearing of improved variety chicken. Data analysed solitary by descriptive statistics. Both men and women were engaged in backyard poultry farming in 54 per cent of the households. Overall, 72 per cent respondents faced lot of constraints like brooding facilities, predator attack, lack of housing facilities and high incidence of diseases during improved variety chicken farming. Among respondents, 67 per cent had a high feeling that birds contributed significantly to their socio-economic strength. Average monthly income has been doubled per house hold by sale of eggs and live chicken. The findings of this study revealed that rearing improved variety chicken had positive impact on family health, source of income, employment and other social demands of resource constrained community people.

HIGHLIGHTS

- Desi chicken used for backyard poultry farming had low production capacity.
- Backyard poultry farming with improved variety chicken performs better than *desi* chicken in production parameters.
- Rearing improved variety chicken had optimistic effect on family health, source of income, employment and other social demands of resource constrained community people
- Rearing improved variety chicken will improve their skills of most of the poor women and youths.

Keywords: Socio-economic, Chicken, Local community, Pattern of rearing, Backyard poultry

Backyard poultry farming with *desi* chicken is an age-old traditional practice in rural India. It is mostly popular in rural and resource constrained areas of India. Chicken production has contributed significantly to resource constrained families in terms of source of protein, supplementary income and other social demands of rural people. Traditionally, *desi* chicken used for backyard poultry farming

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which had low production capacity. To increase the productivity of backyard poultry farming, improved variety birds with high production capacity are now being massively introduced in many regions (Singh *et al.* 2021). Backyard poultry farming with improved variety chicken performs better than desi chicken in production parameters and increase the income and nutrition support to the rural areas of Tamil Nadu (Chitra, 2019). Improved variety chicken performance was found good and well adapted to local agro climatic condition under free range system of rearing (Sree *et al.* 2017; Singh *et al.* 2002). Backyard poultry farming with improved variety birds tailored to the local climatic condition in Tiruchirappalli district and these birds raised by farmers for their source of revenue and nutritional security (Jagatheesan *et al.* 2020). Rural backyard poultry cannot contribute more income but improve the skill of most of the poor women and help them to uplift the socio economic and nutrition status of the poor people (Neilson *et al.* 2003; Okitoi *et al.* 2007). Lot of constraints faced by the poultry keepers during backyard poultry farming like lack of feed supply, predator attack, high incidence of disease, so need an introduction of hybrid variety birds that are suitable for backyard poultry farming (Deka *et al.* 2013). Since *desi* variety chickens had low production potential, improved varieties like Vanaraja and Gramapriya were introduced into the rural villages by Indian Council of Agricultural Research–Directorate of Poultry Research, in Hyderabad under Poultry Seed Project (PSP). Veterinary University Training and Research Centre, Tiruchirapalli is one of the coordinating institute for this project and received day old chicks from College of Poultry Production Management, Hosur (Jagatheesan *et al.* 2020). Vanaraja and Gramapriya chicken under backyard farming had been reported to obtain much benefit in terms of more egg production, higher body weight and adaptability with low expenditure under scavenging condition in rural areas (Singh *et al.* 2018). However, understanding of how the improved variety chicken production contributed to socio economic index in resource constrained community peoples is not documented in Tiruchirappalli district. The study has been undertaken after the period of one year to know the socio-economic improvement in that community after rearing of improved variety chicken.

MATERIALS AND METHODS

Selection criteria for respondents: Annual income less than ₹ 1, 50,000

Area of study: In and around Tiruchirappalli town

Period of supply of day-old chick: November 2021

Period of conducting study : December 2022

Total number of respondents : 100

Total number of chicks distributed: 50 improved variety day old chicks each

DATA COLLECTION

Data collected through a well-structured interview schedule as well as by self-observation in the field. The questions were set to know the pattern of rearing, socio economic status of the family and also to know the socio-economic importance of chicken on house hold needs, income for emergency needs and providing source of employment. Information pertaining to owners age, sex, education status, annual income, total number of birds at hand, number of eggs produced and consumed, vaccination details, type of housing, feeding practices, rearing practice, ethno veterinary practices and marketing system for day old chicks was collected. All the collected information was computerized and analysed by using descriptive statistics. Few questions were ranked from 1 to 5 using Likert scaling categorizing the answers as very high, high, moderate, low and very low if they scored 5,4,3,2 and 1 respectively (Nemoto and Beglar, 2014).

RESULTS AND DISCUSSION

Demographic information of folk involved in rearing improved variety chicken

Age

In the present study, majority of the people were in the age group of more than 40 years (61 per cent) followed by 31 to 40 years (29 per cent) and less than 21 to 30 years (10 per cent) in contrast to Deka *et al.* 2013. This finding gave fair idea about old people those who are not able to do other activities and involved in rearing chickens because it is easier way to generate income and also it indicated that they rear chicken from their ancestral decades.

Gender

The data depicted that more than half of the respondents 54 per cent both men and women in a family engaged in rearing improved variety chicken followed by only women in a family involved about 38 per cent. This study revealed that rearing improved variety birds is a remarkable economic activity in rural areas for men and women because of their profits and the faster way to generate earnings within a short period of time. This is in agreement with the study carried out in resource constrained communities in Dodoma region in Tanzania (Ngongolo *et al.* 2020). Women empowerment through self-employment and entrepreneurship training in different socio-economic sectors like poultry farming resulted in upliftment of socioeconomic status of resource constrained community people in Tiruchirappalli district.

Education

A greatest part of people 73 per cent were come under primary level of education followed by 23 per cent of respondents were illiterate and 4 per cent done secondary level of education. These findings were similar with Deka *et al.* (2013). Interaction with the respondents revealed that they were engaged in agriculture coolie and animal husbandry activities early in life. So, they depend mainly upon chicken production for their source of income and nutritional security. It is suggested that, to popularize the improved variety chicken efforts be made to establish the scientific principles in chicken rearing through skill development training programme.

Occupation

Most of the respondents 64 per cent were agricultural coolie and 36 per cent were met out expenditure through other coolie and animal husbandry activities. So rearing of improved variety birds can help them for revenue generation, protein source and employment during the lean periods. It will assist to envelop periodic negligible expenditure of the resource constrained community people in Tiruchirappalli district.

Experience

About half of the respondents 54 per cent had experience in rearing backyard *desi* chicken for more than six years, followed by 23, 15 and 8 per cent for four to six, two to four and less than two years respectively. It is indicated that most of them already had experience in rearing *desi* chicken. Hence this improved variety chicken might uplift the socio-economic status of the family.

Table 1: The demographic information of people who keep improved varieties of chicken

Categories	Classification	Criteria	% Categories (n = 100)
Sex	Both		54
	Male		8
	Female		38
Age	Old	>40	61
	Adult	31-40	29
	Young	21-30	10
Education level	None	No formal education	23
	Primary	Acquired standard seven	73
	Secondary	Acquired secondary education	4
	Tertiary	Acquired education colleges or university, i.e., diploma, degree	Nil
Annual income	PIP	<50,000	62
	Poor	50,000 to 1,50,000	38
Profession	Government sector		0
	Private sector		0
	Agriculture coolie		64
	Coolie (others)		36
Experience	Senior	>6	54
	Mid	4-6	23
	Intermediate	2-4	15
	Low	<2	8

PIP – Participatory Identification of Poor.

Pattern of rearing

Housing management

Majority of respondents 77 per cent constructed cages with locally available materials such as wood, mud, wire mesh, bamboo sticks etc., But for resource constrained community people never increase their number of chicken due to lack of

space. They started to sell chicken within a short period due to lack of housing. Housing of poultry is an important characteristic of poultry rearing and be short of good housing systems by small farmers may become a most important reason for failure of this endeavour (Thakur *et al.* 2020).

Table 2: Pattern of Rearing

Categories	Classification		Percentage
System of rearing	Free range		19
	Semi- intensive		75
	Intensive		6
Feeding	Kitchen waste/ broken rice		90
	Commercial feed		10
Health care	Vaccination	Yes	20
		No	80
	Deworming	Yes	4
		No	96
	Treated by vet	Yes	29
		No	71
	Treated by self	Yes	48
		No	52
Litter material	Provided		0
	Not provided		100
No of birds at hand	<30		3
	30-50		88
	>50		09
Type of chicken	Vanaraja		50
	Gramapriya		50
Constraints in rearing	Yes		72
	No		28
Types of constraints faced by the respondents	Brooding difficulties	Yes	70
		No	30
	Infectious disease	Yes	60
		No	40
	Predator attack	Yes	68
		No	32
	Lack of Housing facilities	Yes	72
		No	28
Potential customer	Nearby households		24
	Shops		26
	Market		10
	Own purpose		40

System of rearing and feeding practices

About ¾th of respondents rearing improved variety chicken in semi-intensive system of rearing. Majority 90 per cent of respondents provided kitchen waste and broken rice in addition to grazing. Nath *et al.* (2012) reported that the birds ate insects, earthworms, grass, grains, crop residues, kitchen left over and vegetable in the backyard poultry system of rearing and 10 per cent of respondents providing commercial feed. Kyule (2014) study showed that in addition to grazing extra feeds offered are small amount of cereals, which include millets, sorghum and maize.

Health care

Less than 20 percent and 4 percent of the respondents vaccinated their chicks against Ranikhet disease and deworming respectively. Kothandaraman *et al.* (2019) found that no systemic care was given to backyard poultry chickens regarding avian diseases and none of the village people vaccinated their chicken. Vaccination schedule should be strictly followed to obtain good results. Half of the respondents treated their chicken for infection by themselves. Most of the farmers using herbal medicine for poultry infection reported by Thakur *et al.* (2013). Hence, it is recommended that ethno veterinary practices may be popularized among resource constrained community people.

Litter material

None of the respondents provided litter material. They don't have adequate knowledge about management practices of rearing chicken. Hence training may be given among the resource constrained people.

Number of birds at hand

Only 9 per cent had more than 50 birds at hand indicated that resource constrained people had problems like lack of housing facility, lack of proper scientific knowledge about vaccination, deworming and other managemental activities.

Constraints faced by respondents

In the present study, overall, 72 per cent respondents faced lot of constraints like brooding facilities, predator attack, lack of housing facilities and high incidence of diseases during improved variety chicken farming. Conroy *et al.* (2005) study revealed that New Castle disease in chicken in India was not

a major source of mortality but the foremost basis was predator attack. Varadharajan and Gunasekaran 2019 identified that high incidence of poultry diseases, lack of suitable germplasm and predator attack are the major constraints in backyard poultry farming in Cuddalore district. Proper education and skill development training may be given to resource constrained community people.

Perception of respondents on Socio- economic importance

Socio economic importance of chicken

Based upon Likert scale scoring, 67 per cent of the respondents felt like chicken rearing had very high influence on socio economic importance (Table 3). It helps mostly for income generation, employment, nutritional status to the family and for emergency demands of people. It cannot contribute high income but these improved variety chicken rearing will improve their skills of most of the poor women and help them to increase their socio economic and nutritional status.

Table 3: Perception of respondents on Socio economic importance of chicken

Categories	Classification	Criteria	% in each category (n=100)
Socio-economic importance (likert score)	Very high	5	67
	High	4	25
	Moderate	3	6
	Low	2	2
	Very low	1	0
Socio-economic benefits (likert score)	Food (Protein source)	5	48
	Income	4	38
	Employment	3	10
	Offering to god	2	3
	Manure	1	1

Economic factors of chicken

In India, chicken rearing in Tamil Nadu is a mode for creation of income or main basis of livelihood for people and in Rajasthan kept for household utilization or main supply of family proteins (Conroy *et al.* 2005). This study revealed that chicken contributed as protein source and income to the 48 per cent and 38 per cent of family respectively as mentioned in Table 3.

Revenue generated from chicken production

Income generated by sale of eggs

As said earlier only 9 per cent had more than 50 birds at hand. On an average each family had 35 hens at hand. Improved variety chicken produces 120 to 150 eggs per year. For a period of one year 3000 eggs produced. Among the total egg production, 50 per cent of eggs sold out, 20 per cent of eggs used for hatching and the remaining 30 per cent of eggs used for family nutrition. In this study, it was observed that the average selling price of one improved variety chicken egg is ₹ 10 to 15. So, average annual income generated by sale of eggs was rupees 22500 per annum. It is reported that there were potential customers like nearby households, shops and markets for chicken and its products for the 60 per cent of the respondents. (Table 4).

Table 4: Revenue generated through improved variety chicken:

Sl. No.	Variables	Per annum
1	Average number of eggs produced per household	3000
2	Average number of live chicken / house hold	35
3	Average number of eggs sold per household per year	1500
3	Price of eggs produced	10 to 15
4	Average number live chicken sold per house hold per month	4
5	Price of live chicken per kg	150 to 200
6	Total income gain from eggs per annum	20000 to 22500
7	Total income gain from sold chicken per annum	10000 to 15000
8	Annual income	25000 to 30000

Income generated by sale of live chicken

The market price of improved variety live chicken at locally was ₹ 150 per kilo gram based on body weight during marketing age. Each family sold at least 3 to 4 live chicken per month. So, income generated by sale of chicken was ₹ 10000 to 15000 per annum. This finding is contrast to Ngongolo *et al.* (2020) who reported that overall income generated from the sale of live chicken was lower than that from the sale of eggs (Table 4).

Average annual income generated through poultry

Average annual income of the resource constrained people was less than ₹ 1,50,000 before rearing improved variety chicken, now they got additional income of ₹ 25000 to 30000 indicated that their average annual income has been increased per house hold by sale of eggs and live chicken. 62 per cent of respondents reported that their revenue has been increased 50 per cent beyond their regular income from sale of eggs and live chicken. Overall economic growth rate was observed among the respondents was more than cent per cent. This amount helps them to meet out their emergency needs, providing employment and nutrition to the family members. This is in agreement with the study in west Bengal, Dodoma and Tanzania regions which showed that chicken production is an important source of income to small livestock holders (Ahuja *et al.* 2008 and Ngongolo *et al.* 2020).

CONCLUSION

In conclusion, even though rural poultry production does not provide huge income, it stands for a known ability to most poor women and it can support them to shift out of poverty. It is essential to provide support on rearing improved variety chicken by awareness programme, education and skill development training. It will increase a positive impact on improved variety chicken rearing among resource constrained community people in Tiruchirappalli district.

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