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Sustainable Rural Livelihood through Backyard Poultry Farming

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ABSTRACT

An improved variety of backyard poultry namely Rajasri bird was demonstrated to rural farm women of SC community in Ranga Reddy district for improving their livelihoods in the year 2023. A total of 1300 birds were distributed to 65 identified SC beneficiary women farmers. Each unit comprised of five male and fifteen female chicks (20 birds in each unit), one bamboo basket, 5 kg chick starter feed, feeder, and waterer. In the present study, Rajasri birds achieved sexual maturity at 174±14 d with an average body weight of 1250 to 1350 g. The average annual egg production/ bird was 155 to165 eggs per year with an average weight of 45 to 55 g and mortality rate of 2.7% in Rajasri birds. The findings indicated a substantial rise in income of Rs. 17,825 per household annually from the selling of eggs and male birds, as well as a notable increase in the intake of eggs and meat among rural scheduled caste families.

Key Words: Chicks, Eggs, Families, Livelihood, Poultry, Rajasri birds,Women.

INTRODUCTION

Backyard poultry farming has a long-standing tradition in rural India. The majority of backyard poultry farming involves the raising of native bird species, which typically exhibit suboptimal production performance. The productivity of indigenous birds in terms of egg production is only 70 -80 eggs per bird/ year and meat production is also very low (Pankaj *et al*, 2019). Nonetheless, enhancing backyard poultry production is achievable through the introduction of superior chicken varieties, which can lead to increased yields of both meat and eggs. The practice of raising local poultry birds in backyards serves as a significant source of livelihood for the rural population of Telangana. The highest quality chicken meat and eggs are sourced from the backyard poultry sector, commanding a premium market price. The practice of rearing backyard poultry has enhanced food security and the economic conditions of rural families in India (Pica-Ciamarra and Dhawan, 2010). The increasing interest in Indigenous poultry products, coupled with minimal investment in the backyard poultry sector, highlights the necessity for a variety that can deliver strong productivity despite limited resources.

Further, backyard poultry offers rural farmers, landless individuals, and women a means to generate supplemental money for their families. Nonetheless, the issues of inadequate weight increase, reduced egg production per bird, and elevated chick mortality among Indigenous birds are significant obstacles in backyard poultry that must be addressed through the introduction of an enhanced diversity of birds exhibiting superior performance metrics. To enhance the livelihoods and nutritional security of rural communities via backyard poultry farming, the Rajasri variety was developed, characterized by medium size, elongated shanks, and vibrant plumage akin to Indigenous birds (Srinivas *et al*, 2017). Furthermore, it is an oviparous avian species with a reproductive output of 160-180 eggs annually. The eggs are brown, akin to desi eggs, and these birds can endure harsh climatic conditions. This study wasa conducted to assess the performance of Rajasri birds and their influence on the livelihood and nutritional security of rural SC families within the free-range system in Ranga Reddy district, Telangana.

MATERIALS AND METHODS

A total of 1,300 birds were allocated to 65 recognized beneficiaries from the SC community in the villages of Chittapur and Chandkhanguda,

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located in Manchal Mandal, Ranga Reddy district, at no cost. Each unit consisted of five males and fifteen females (20 birds in total), along with one bamboo basket, 5kg of chick starter feed, a feeder, and a waterer. A training program was conducted before distribution to inform farmers about vaccination, management, and disease prevention in birds. The investigation was conducted from March 2023 to January 2024, during which data regarding the production performance of Rajasri birds were gathered from beneficiaries using a semi-structured interview schedule. The collected data were then subjected to appropriate statistical analysis (Snedecor and Cochran, 1994).

RESULTS AND DISCUSSION

Age at sexual maturity

The present investigation revealed that the age at sexual maturity (ASM) for Rajasri birds under scavenging conditions varied from 150 d to 180 d, with an average of 165 d, as shown in Table 1. Sharma *et al* (2004) noted that the range was between 167.3 and 169.3 d; however, a portion of the beneficiaries (24.44%) reported that birds reached sexual maturity after more than 6 months. This could be attributed to inadequate scavenging feed base resources in that region. The early age at sexual maturity of 150 – 165 d (26.66%) and 165-180 d (48.88%) observed in Rajasri birds may be linked to the supplementary feeding with chick starter feed provided to the farmers, along with the availability of maize and broken rice for the poultry birds. In contrast, Dilip *et al* (2013) found that the age at sexual maturity in Rajasri birds was lower than that of Aseel (187.43±1.54) and Kadaknath (196.12±1.75) birds.

Body weight at sexual maturity

A significant proportion of the beneficiaries (75.55%) recorded a body weight ranging between 1300 to 1400g at the sexual maturity of the birds (Table 1). Bhat *et al* (2007) reported that the body weights of Vanaraja birds were 3150 g for males and 2550 g for females at 190 days of age under free-range conditions. Reaching sexual maturity at a lower body weight serves as a positive indicator for the potential of increased egg production.

Mortality

The current study revealed that Rajasri exhibited a lower susceptibility to environmental stress and demonstrated an ability to evade predators effectively. The average mortality of the birds was observed to be 1 to 3 per cent (66.66%) and 4 to 6 per cent (33.33%) as indicated in Table 1. In a similar vein, Bhat *et al* (2007) documented a mortality rate of 3-5 per cent under field conditions. In contrast, Tom Pennycott (2004) noted increased mortality associated with scavenging in the farmer's backyard. The guidance provided to farmers on vaccination schedules, disease management, feed supplementation, and ongoing support from scientists could be contributing factors to the decrease in mortality rates.

Egg production and Egg weight

In the current investigation, 55.55% of the beneficiaries produced 15-18 eggs per bird per month, while 24.44% of beneficiaries exceeded 18 eggs per bird per month. Nevertheless, a limited number of respondents indicated fewer than 10 eggs per bird per month (Table 1). The findings align with those of Padhi *et al* (1999), who documented an annual egg production of 153 eggs in Nicobari hens, as well as Sumita *et al* (2019), who identified the Rode Island Red breed as having the highest egg production potential, yielding 194 eggs per bird per year. According to the findings of Vij *et al* (2006), the Brown breed of chicken in Punjab yields an annual egg production of merely 60-80 eggs. Comparable findings were documented by Sharma *et al* (2004) and Jha and Prasad (2013). A significant proportion of the beneficiaries, specifically 48.88%, recorded an egg weight ranging from 45 to 55g in field conditions, as illustrated in Table 1. Comparable findings have likewise been documented by Wani *et al* (2007) and Kumari and Subrahmanyeswari (2014). Thakur *et al* (2016) documented that the average egg production at 32, 40, 52, and 72 weeks of age in Vanaraja chickens was 32.13±0.11, 50.08±0.32, 89.29±1.02, and 181.12±1.53, respectively. In contrast, the Desi chicken exhibited corresponding values of 11.21±0.03, 25.82±0.18, 42.57±0.72, and 76.27±0.85, respectively. The average egg weight of Vanaraja

Table 1. Production parameters of Rajasri birds.

Sr. No.	Parameter	Number of Beneficiaries	Percentage (n = 45)	SEM
1.	Age at sexual maturity (days)			
	150 – 165	12	26.66	14.36
	165 – 180	22	48.88	
	>180	11	24.44	
2	Body weight at sexual maturity in (g)			
	1100 – 1200	11	24.44	25.00
	1300 – 1400	34	75.55	
	>1500	11	24.44	
3	Mortality percent			
	1 – 3	30	66.66	32.5
	4 – 6	15	33.33	
4	No. of eggs produced / bird/month			
	10 – 15	9	20.00	20.98
	15 – 18	25	55.55	
	>18	11	24.44	
5	Egg weight (g)			
	40 – 45	9	20.00	16.52
	45 – 50	22	48.88	
	50 – 55	14	31.11	

at 32, 40, and 52 weeks of age was notably ($P \leq 0.05$) greater than that of Desi birds. Chaturvedi *et al* (2015) indicated that the egg productivity of desi birds was measured at 36.5±0.2 eggs.

Economics of Rajasri birds rearing under free range system

The revenue generated from the sale of adult males amounted to Rs. 3200/-, while the sale of eggs yielded Rs. 14,625/- at a rate of Rs. 6.5/- per egg, as noted among the majority of the beneficiaries (Table 2). The annual net profit from 20 birds amounted to Rs. 16,825, resulting in a net profit per bird of Rs. 84.25, which the farmers regarded as a financially sustainable venture (Table 2). Daida *et al* (2012) indicated that the income per day per beneficiary amounted to Rs. 28.51, excluding bird costs. Pica Ciamarra and Dhawan (2010) conducted a calculation of net income on a per hen basis within the framework of scavenging/semi-scavenging management, revealing that the income fluctuated between Rs.570 and Rs.1662, adjusted to 2007 price levels. Praveen *et al* (2018) indicated that the net average income produced by tribal women farmers through backyard poultry annually amounts to Rs. 7454/-. The superior returns can be attributed primarily to enhanced profits from egg sales, as the volume of egg production increased, coupled with a reduction in mortality rates. The typical yearly consumption of eggs per household rose from 100 eggs annually to 600 eggs each year. The rearing of Rajasri birds demonstrated a noteworthy ($p<0.05$) enhancement in egg production, accompanied by increased hatchability rates, which in turn led to a significant ($p<0.05$) boost in supplementary income and nutritional security for rural families (Kumari and Subrahmanyeswari, 2014).

Table 2. Economics of Rajasri birds rearing under free range system.

Sr.No.	Parameter	Amount (Rs.)
1	Night shelter, feed grains, vaccines (Rs. 50/- bird/annum)	1,000/-
2	About 2250 eggs from 15 females @ 6.5/- each (150 /annum/ bird)	14,625/-
3.	By sale 5 males @ Rs. 320/ - kg. (each bird 2 kg)	3,200/-
4.	Total income per annum	17,825/-
5	Net profit per annum	16,825/-
6	Net profit per bird	841.25/-

Reports indicated that synthetic crossbred high-yielding birds were well-suited for backyard rearing systems and can be profitable (Padhi *et al*, 2003). Comparable results were noted by Chatterjee *et al* (2002). Rajbongshi *et al* (2020) indicated that backyard farming possesses the potential to enhance the economic conditions of a significant number of tribal rural families, as it is characterized by low or negligible input requirements. The study also highlighted that the chosen progressive farmer achieved an annual net profit of Rs. 1,17600/- through poultry rearing. According to Lok Prakash *et al* (2020), Kadaknath farming functions similarly to a cash crop within the livestock sector. The Kadaknath breed, characterized by its disease resistance and robust nature, requires minimal input while commanding a high market price due to increasing demand, rendering its rearing a lucrative agricultural endeavor. The heightened revenue from the cultivation of indigenous birds may be attributed to the superior productivity and reproductive efficacy of the Rajasri.

CONCLUSION

The findings of this study indicated that the Rajasri bird thrives in scavenging conditions, contributing positively to the socio-economic status of rural families within the SC community. An observable significant increase in subsidiary income (@ Rs.17,825/-family/annum) was noted through the sale of eggs and male birds. A notable increase in the consumption of eggs and meat was observed among the families benefiting from the program. In addition to selling eggs and meat, the farmers were generating income by sustaining the enterprise through the reproduction of chicks using local hens for brooding.

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