

Improved poultry variety

for income and nutritional security in semi-arid areas of Telangana

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Development of organized poultry has marked the contribution of backyard or household poultry in rural areas of Telangana where rural poultry constitutes about 27% of the total poultry population. In order to improve nutrient availability of poor households in rural areas of Vikarabad district, Telangana, low input technology backyard poultry farming using Srinidhi breed was introduced under Farmer FIRST Programme for supplementing the earnings of poor farmers and landless labourers. The nutritional status pre-and post-intervention was assessed and as per the production and reproduction performance data obtained on Srinidhi poultry, their role in reducing the nutritional deficiency in the area was demonstrated to the farmers. The study revealed significant higher production performances of Srinidhi variety over the indigenous poultry birds and has a better support system to livelihood and nutritional security under backyard poultry production in the dryland region.

Key words: Backyard poultry, Energy, Nutritional security, Protein, *Srinidhi*

POULTRY is one of the fastest growing subsectors of the animal husbandry sector in India. According to the Livestock Census 2012, out of 729.2 million of total fowls, 217.5 million poultry birds are reared under backyard poultry farming. The backyard poultry farming contributes 19.8% of total egg production in

India. Telangana has the highest proportion of meat-eaters (almost 99%) in the country. Egg has been identified as the best source of correcting protein malnutrition among the people who prefer to eat it. Looking to this opportunity of improving protein nutrition, the study intervened in supplying

improved backyard poultry variety, *Srinidhi* to the farmers of Pdugurthy Pudur Mandal, village, Vikarabad district, Telangana (Fig. 1). This intervention has been viewed with great potential for women empowerment as it is basically done by women and play a vital role in livelihood generation. Establishment



(a) *Srinidhi* bird reared under backyard farming



(b) Eggs of *Srinidhi* bird obtained in the village

Fig. 1. *Srinidhi* bird, significantly larger and nutritive than the local variety and laid eggs 4 times more.

of small and medium poultry farms with superior germplasm in rural areas will address the twin problems of accessibility and affordability to poultry products to rural people by cutting down costs on labour, transportation of inputs and outputs.

In Pudur Mandal, the poultry production output corresponds to the backyard poultry production because people prefer poultry units of small size i.e. 10 to 20 birds each rather than bigger units. The activity has further been made successful with the availability of good quality *Srinidhi* variety of chicks.

Srinidhi is a dual-purpose variety developed at ICAR-Project Directorate on Poultry, Hyderabad for backyard poultry production in rural and tribal areas. It has been observed that consumers have preference for coloured birds and brown-shelled eggs, both of which are produced in the rural backyard system through rearing of *Srinidhi*. However, there are major constraints in rural areas like non-availability of good poultry germplasm, higher feed cost, predation and high mortality which discourages the farmers from poultry farming. *Srinidhi* birds, owing to the similarity in phenotypical appearance with desi birds, it is well taken by the farmers of Telangana. Moreover, these birds have higher growth rate, less mortality, brown colour egg and higher egg production. In poultry, body weight at different ages, egg production, egg weights, mortality percentage, hatchability and ratio of egg weight and chick weight are the major traits of economic importance (Fig. 1). Though a lot of works have been carried out on the performance of production and reproduction traits of established breeds, very scanty of information is available on rearing of established poultry bird in backyard condition. Keeping these views in mind, the purpose of this study was to compare and evaluate the potential of *Srinidhi* variety with that of indigenous poultry birds under backyard rearing system for improved profitability as well as improved protein nutrition.

Experimental area

Fifty landless and small farmers

Table 1. Schedule of vaccination carried out in the Pudugurthy village

Date	Age (Day)	Name of vaccine	Strain	Dose	Route
23-12-2017	0	Marek's Disease	HVT	0.20 ml	S/C inj
28-12-2017	5	Ranikhet Disease	Lasota	One drop	Eye
07-01-2018	14	Infectious Bursal Disease	Georgia	One drop	Oral
14-01-2018	21	Pox	Fowl pox	0.20 ml	S/C inj
22-01-2018	28	Ranikhet Disease	Lasota	One drop	Eye
01-03-2018	9 week	Ranikhet Disease	R ₂ B	0.50 ml	S/C inj
22-03-2018	12 week	Pox	Fowl pox	0.20 ml	S/C inj

having prior experience of poultry farming from Pudugurthy village (17.18874° N, 78.02364° E), Pudur Mandal, Ranga Reddy District, Telangana were selected, geo-tagged and were given day-old chicks of *Srinidhi* breed. The average annual rainfall of the area is 871 mm.

As per the recommendation of ICAR-Directorate of Poultry Research, Hyderabad, 1,250 chicks of *Srinidhi* variety were procured from them and distributed to 50 farmers (each 25 chicks) having a small enclosure and little feed resources.

Management of birds

The farmers were trained for nursery and free-range management before the chick distribution in the village. The chicks were kept in the house with 6-7 cm of paddy husk as deep litter material. Provision of the 60-watt bulb was made in the enclosure as a source of heat up to 6 weeks of age. Sufficient clean drinking water and feed were provided to all the birds during the brooding period and natural feeding practice was followed thereafter during production stages. They were offered feed made up of locally available feed ingredients (broken rice-50 parts, rice bran-20 parts, groundnut meal-28 parts, mineral mixture-2 parts). After 6 weeks of age, birds were kept as free-range living with vigilance on them to keep away from dogs and cats. The birds were left for foraging during 6 am to 6 pm and the feed mixture was offered to them in the evening @ 200-250 g daily. Before leaving them for foraging, the birds were provided clean drinking water in order to avoid intake of impure water outside. Vaccination schedule followed for the birds is given in Table-1.

Collection of data

Raw data on body weights at day

old, 20, 40 and 52 weeks of age and overall egg production were recorded (Fig. 2). Mortality percentage was also noted at these intervals. Egg weights at sexual maturity and at 40 weeks of age were also recorded.

Marketing of produce

All eggs produced were used for household consumption, however, their market rate was ₹ 5/egg. Males were used for home consumption after attaining a body weight of 2.5 to 3.0 kg at six months of age (Fig. 2). Several farmers decided to retain some of their female birds for egg laying purpose also. The price of poultry meat in Pudurmandal was ₹ 180/kg.

Feeding habit of the area

The average family type of area comprised 3-4 adults (mother/father+husband and wife) and 2 children. The basic feeding habit consisted of a cup of tea made up of 200-250 g milk in the morning and 250 g milk daily for children. Then, they cook rice of 750 g daily which is used for the whole day (breakfast and lunch). They cook dal of 150 g every 3 days and other days of the week, curry of leafy vegetables 500 g is cooked. Thus, each day, they either consume only curry or dal. Daily one big *jowar roti* for adult and small for child (150 g daily in total) member will be cooked which they consume during lunch time. Most of the families will consume chicken meat (500 g) every week and one egg each once in a fortnight. During the night, they will again cook 300 g of rice and eat with curry/dal which was prepared during the day time. Each family use a curd pack of 500 g every 3 days. Ghee (butter) was consumed occasionally, however, small quantities of vegetable oil like groundnut oil, sunflower oil are used

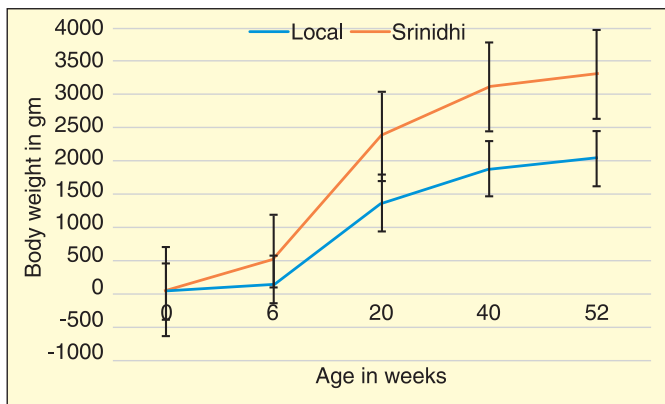


Fig. 2. Body weight of local and *Srinidhi* bird at different intervals in the Pudugurthy village

in small quantities 10-15 ml per day for frying purposes. Fruits such as mangoes, guava, papaya and oranges were consumed seasonally and occasionally in negligible quantity only. Tea is popular in the area as beverage apart from local liquor.

Assessment of nutritional impact

The average body weight of adult male, female and child were 51.3, 38.7 and 18.5 kg, respectively in the Pudugurthy village. Adult unit for converting to standard units was made taking 60 kg for male and 50 kg for female. The BMR was calculated based on the body weight and average height of the people, energy and protein requirement was calculated as per their average body weight as per NIN (1997). Basic diet plan was considered for existing energy and protein levels in the diet and the final diet was considered assuming the egg production and chicken production which was consumed at the household level.

Statistical analysis

Means and standard errors of various production and quality traits were calculated using standard statistical procedures. Analysis of data was done by using IBM SPSS Statistics (Ver. 21.0) software.

Body Weights

The mean body weight at different ages for local birds and *Srinidhi* variety at the field are given in Fig. 2. The body weights of *Srinidhi* were significantly higher than the body weight of local birds at different ages (6-52 weeks). *Srinidhi* in the field under backyard conditions was able to attain 2.64 ± 0.2 kg after 6 months

of age, however, local birds could achieve only 1.53 ± 0.3 kg at the same age. At the end of a year, *Srinidhi* could achieve a body weight of 3.23 ± 0.26 kg as compared to local control birds at 1.91 ± 0.31 kg.

Production performances

Age at sexual maturity in *Srinidhi* variety was exhibited at much earlier age (181.3 ± 6.3 days) than that in local birds (254.2 ± 23.5 days) (Fig. 3). The farmers started getting their first egg from *Srinidhi* birds at the age of 186.4 ± 5.8 days as compared to 268.3 ± 26.8 days for local birds. Thus, at the age of 40 weeks, they were getting only 14.5 ± 2.2 eggs, now the farmers were able to receive 56.7 ± 6.2 eggs. Thus, with the introduction of new variety in the

village, farmers were able to get dual benefit of four times more eggs much earlier (78 days before). Annually, the farmers were getting 82.6 ± 16.3 eggs per year which was almost doubled to 154.4 ± 12.5 eggs per year with the *Srinidhi* variety. Survivability % upto 6 weeks of age was significantly higher in *Srinidhi* birds as compared to local birds (Fig. 3).

Nutritional impact of poultry-based intervention

The basal metabolic rate requirement per adult unit in the village was 1271.30 Kcal which was fulfilled with the prevailing diet, however, this was not sufficient to meet the energy requirement per adult unit (Fig. 4). The energy level in the diet of people was deficient to the tune of 37.35% which was marginally improved by broiler and egg-based diet created from the intervention to the level of 33.52% deficiency. This calls for improving the energy level in the diet of people by incorporating some cereal as well as fruits. However, the intervention

Table 2. Economics of *Srinidhi* chick rearing in the Pudugurthy village

Particulars	Total (₹)
Cost of chicks (₹ 16 per chick) – total 1250 in number	20,000
Cost of feed per annum (₹ 12 per kg) home-made feed only	547,500
Labour – only family labour and no hiring	-
Total expenditure	567,500
Income from sale of birds (@ ₹ 600.00 per bird with 30% mortality)	525,000
Income from sale of eggs (154 eggs per bird @ ₹ 5 per egg)	673,750
Gross income	1,198,750
Net profit	631,250
Net profit per HH	12,625

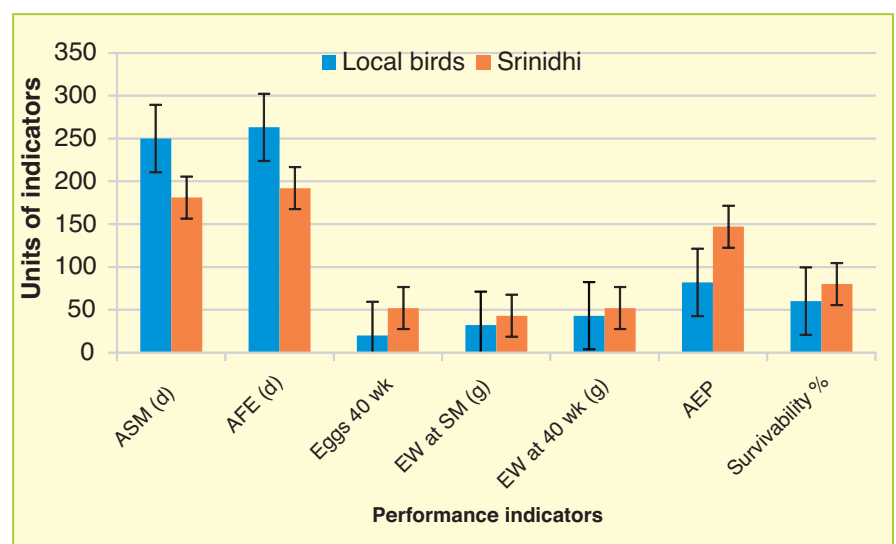


Fig. 3. Performance of *Srinidhi* bird vis-a-vis local birds

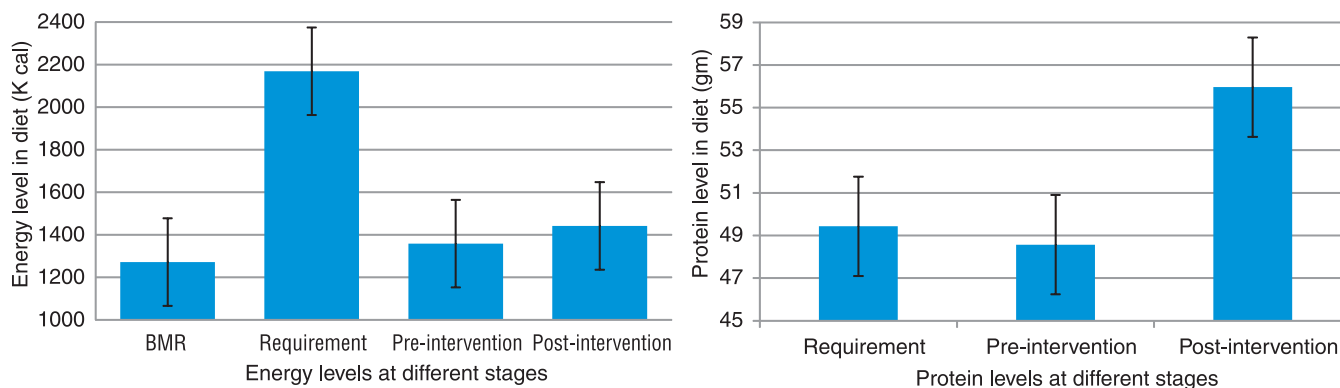


Fig. 4. Nutritional impact of poultry based intervention on per capita adult unit (AU) basis in Pudugurthy village
BMR=Basal Metabolic Rate in Kcal

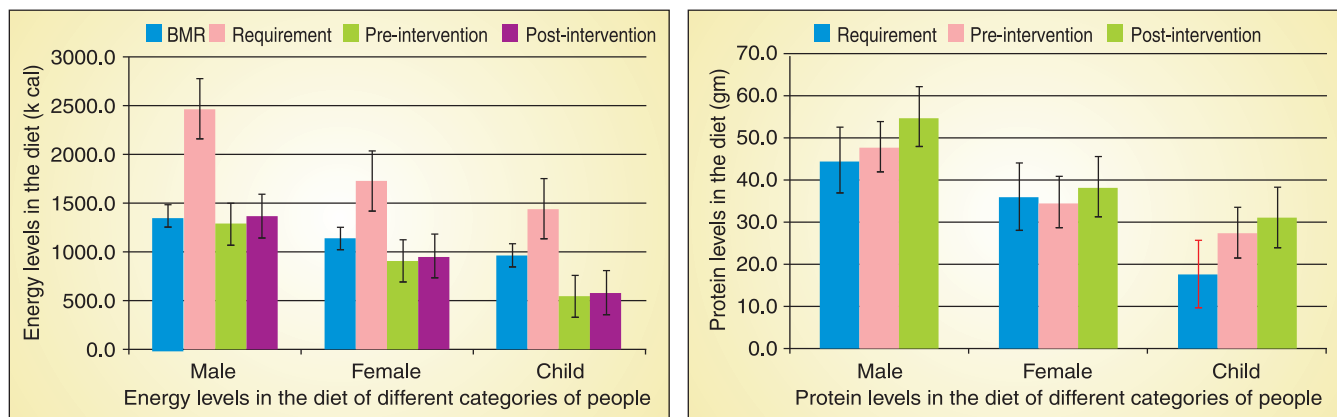


Fig. 5. Nutritional impact of poultry based intervention on different categories of per capita people in Pudugurthy village

was able to make the population protein sufficient which was otherwise deficient by 1.75% and after the intervention, the protein sufficiency was in excess of 13.21% as compared to their requirement.

When the analysis was carried out across different family members (Fig. 5), it was found that the children's diet was more deficient in energy (62.8%) as compared to adult male (48.1%) and adult female (47.4%). On actual body weight and height basis, the diet was able to satisfy BMR requirement only for males, however, existing diet was unable to meet the BMR requirement in females and children in both types of families. Protein in the diet of children and males was enough, however, it was deficient in diet of female (3.7%). This deficiency in the female diet was overcome with the poultry intervention when the diet of females became excess of 6.8% protein. Since children require excess protein for their growth, the intervention was able to provide 76.7% excess of protein in diet to provide enough growth

opportunities. This intervention was able to create protein piling in the village; however, it should be supported with some cropping system to follow the energy sufficiency at the household level in the village.

Economics of the poultry rearing

At the end of the year, total expenses made for rearing of *Srinidhi* chicks were ₹ 567,500 without including the contributions of family labour (Table 2). Through the sale of birds and eggs, if it has not been consumed at household level, the project has the potential to raise ₹ 12,625 net profit from each household.

Future recommendations

The initiative has improved self-employment and women empowerment through poultry production in the rural areas and tackling malnutrition through ensured availability of nutritious diet. Ultimately, the per capita availability of eggs and poultry meat has also increased with the growth of backyard poultry. For promoting the

backyard poultry, it is necessary to give the much-needed infrastructural support (in form of improved poultry birds/ day old chicks at subsidized rate, hatchery units, training, etc.) to the targeted beneficiaries in order to get optimum production from this sector.

CONCLUSION

In order to improve nutrient availability of poor households in rural areas of Vikarabad district, Telangana, low input technology backyard poultry farming was introduced under Farmer FIRST Programme for supplementing the earnings of poor farmers and landless labourers. The study revealed significant higher production performances of *Srinidhi* variety over the indigenous poultry birds can support a better way of livelihood and nutritional security under backyard poultry production in the dryland region.

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