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Backyard poultry farming: A source of livelihood and food security in rural India

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Abstract

Backyard poultry farming is a traditional system of rearing poultry with small flock size of native birds by farmers to meet their dietary or small cash needs. It is an eco-friendly approach as these are very active in pest control and also provide manure. Backyard poultry provides supplementary income in shortest possible time with very minimum capital investment, simple in operation and ensures availability of egg and meat even in remote rural areas. It is a low input and low output system. However, development of superior strains of backyard poultry can remarkably improve nutritional status and income of rural communities. Therefore the review is focus on various aspects of backyard poultry farming in rural India including basic knowledge, advantages, different government schemes and some approaches or strategies for improving backyard poultry production.

Keywords: Backyard, native birds, income, rural community

1. Introduction

In Livestock production system particularly poultry sectors play important socio-economic roles in developing countries [4, 32]. The poultry sector has become one of the fastest growing segments in Indian agriculture and contributing a considerable proportion to the national GDP. The composite growth in poultry and allied sectors is due to the tremendous efforts towards advancement of new technologies and efforts towards nutritional improvement etc. In India, since last 40 years there is multi-facets growth in poultry production in terms of high yielding layer (310-340 eggs per annum) and broiler (2.4-2.6 kg at 6 wks) varieties which, contributed to an amazing growth rates in egg (4-6% per annum) and broiler production (8-10% per annum). In a developing country like India, growth in the livestock sector can definitely contribute to poverty reduction, as the largest share of the rural community depends on livestock for their daily livelihoods. Certain managemental factors such as nutrition, housing, management and disease control measures have led to development of high yielding layer (310-340 eggs per annum) and broiler (2.4-2.6 kg at 6 wks) varieties which, in turn has contributed to an amazing growth rates in egg (4-6% per annum) and broiler production (8-10% per annum) in India during the last 40 years. It has also been observed that the demand for the animal protein source is increasing rapidly in developing countries [3, 14]. In India increase in productivity results in increased annual per capita availability of egg to 74 eggs and 2.96 kg of meat [7] which however, is lower than the recommended level of consumption of 180 eggs and 10.8 kg poultry meat per person per annum as per Indian Council Medical Research. Most of the backyard poultry production in India comprises rearing of indigenous birds with poor production performances. The potentiality of indigenous birds in terms of egg and meat production is also very less. However, with improved varieties of chicken and their management the backyard poultry production can be easily boost up and can promise a better production of meat and egg. The backyard poultry play important role to improve the socio-economic status of the traditional farmers, as it is a handy enterprise with low-cost initial investment, but high economic return along with guarantee for improving protein deficiency among the poor. Their products carry a much higher price than that from commercial poultry and preferred among peoples.

2. Definition of backyard poultry

Backyard poultry is nicely described by Mandal *et al.* 2006 [16]. As defined by them it is a low input or no input business and is characterized by indigenous night shelter system [11, 31],

scavenging system^[22, 30] with little supplementary feeding^[11, 31, 28] natural hatching of chicks^[34], poor productivity of birds^[1, 29] local marketing^[11, 31, 27] and no health care practice^[11, 31].

3. Backyard poultry in Indian Scenario

In Indian scenario the development in poultry production owes to various factors such as growth in income and urbanization, progresses in processing technology and improvements along the marketing chain^[14, 25]. According to the OECD-FAO Agricultural report 2008-2017^[13] has estimated that Indian demand for poultry products will be enhanced at 4.8 percent whereas the supply of poultry products will grow at 5.2 percent per year over the decade which is faster than any other type of animal product. According government of India report the eggs and broilers productions has been reported to increase at a rate of 8-10% per annum but the growth has been mainly limited to commercial poultry and the contribution of backyard poultry is negligible. However, this growth in the poultry sector has not been able to contribute much to poverty reduction and improved nutrition in rural India^[24]. Pica-Ciamarra and Otte, 2008^[24] revealed that statistically a landless poor agricultural family unit keeps 1.2 non-descript low yielding local birds in the backyard, which would sum up into an average flock size of 8 to 9 birds per poultry keeping household. This type of backyard flocks only make a very negligible contribution to rural livelihoods, as the net income per bird per month ranges was very low. But the low input requirements to backyard poultry farming a reason to attain an inexpensive and reasonable source of highly nutritious food items at low cost.

4. Conventional and improved varieties of backyard poultry birds

In rural poultry farming, 5-50 numbers of birds are raised under a traditional extensive backyard scavenging system without special management of feeding or housing. In rural areas, chicken reared under backyard system are generally low producing with respect to egg and meat 32.11% of total egg production in India is contributed by backyard desi chicken^[15]. Their contribution to the total egg output was stagnant for the last few decades is attributed to their low productivity (egg production: 50-60 nos./annum). Usually non-descript desi birds are reared but in some areas, local breeds and crossbreeds derived from them and also specific improved varieties of birds are now available for rearing for meat or eggs purpose and few varieties for dual purpose. Rural poultry farming should involve rearing of improved chicken varieties under free range, semi intensive or intensive conditions^[10].

Understanding the importance of backyard rural poultry farming in India, several research organizations have developed different backyard chicken varieties which have successfully been reared by farmers from many parts of the country. These improved varieties include Gramapriya, CARI-nirbhic, CARI-Shyama, Vanaraja, Gramalaxmi and Nicobari. Out of these the first four are of dual purpose whereas rest are egg type^[23].

5. Schemes for Rural Backyard Poultry Development in India

The component of poultry development schemes carried out by Central Government, India provides the benefits to the people from Below Poverty Line. This is one of the initiatives the Govt. has taken to mainly enable them to gain subsidiary

income and nutritional support for livelihood. During 2013-14, around 40 crore has been sanctioned which covered for assistance to nearly 1.66 lakh BPL beneficiaries. Under Rural Backyard Poultry Development programme introduced in 2009-10, till date funding has been done and its include around 6.13 lakh BPL beneficiaries⁽⁶⁾.

6. Advantages of Backyard poultry

1. Provides employment to the rural small scale and marginal farmers.
2. Provides additional supportive income to the rural households.
3. Feed cost is very less
4. Products from rural poultry farming fetches high price compared to those from intensive poultry farming.
5. Backyard poultry keeping is one of the most effective methods to assure the availability of poultry meat and egg in rural areas.
6. Poultry meat and eggs obtained from backyard by foraging hens is the cheapest source of animal protein to combat the malnutrition.
7. Egg and meat of birds reared under free range conditions have low cholesterol concentration compared to those produced under intensive poultry farming.
8. Any family member like woman, children can manage the backyard poultry.
9. It provides small but regular income and save money on egg, meat and garden fertilizers etc.
10. Keeping poultry as backyard is an enjoyable and satisfying hobby of some rural poultry keepers.

7. Constraints of Backyard poultry

7.1 Productive and reproductive efficiency is relatively low: Productivity of indigenous breed chickens is much lower than commercial chickens even under ideal housing and feeding conditions^[35]. Egg production in backyard conditions is less (30-80 small eggs/hen/year) as compared to commercial strain (300 eggs/hen/year). Desi chickens reach point of lay (26-30 weeks) late^[26] as compared to commercial layer breeds (18-22 weeks). The average egg weight of local chicken is 52 g (35-60 g)^[17] that is very low compared to commercial strains (60-70 g). In spite of this, in the adverse village environment the performance of local birds are good where the performance of commercial breeds is very poor.

7.2 Mortality: The factors affecting mortality rate are diseases, parasites, predation, accidents and bad weather⁽¹⁹⁾. Disease outbreak is one of the major obstacle to poultry production in developing countries. Bell (2009)^[8] and Njagi *et al.* (2010)^[20]. The most common reason of the high mortality rates observed in small scale poultry flocks, Newcastle disease virus is highly infectious among chickens, and virulent strains can cause up to 100% mortality annually^[33]. Predation is found to be the highly devastating factor to the village poultry. As the chick stage is most vulnerable, initial growing in the nurseries before distribution can to some extent solve this problem. Predation can be prevent by close monitoring of chickens during scavenging periods and keeping them inside shelter during the night hours^[2, 18].

7.3 Veterinary and health care: Many rural areas are poor in resources and infrastructure can result in restricted veterinary and extension services (FAO, 2014)^[12]. Non availability of veterinary aids and skilled workforce for vaccination and

treatment at village level, results in the devastation of the flock by diseases. However, the formation of networks of community-based animal health workers, where training and knowledge is passed between veterinarians, governments and communities, has been found to be effective.

7.4 Housing and nutrition

Local birds are depend on kitchen waste, ash, fruits, plants, soils and other local resources to meet their daily feed requirement along with minerals and vitamins need ^[19]. In addition bird's scavenge to prey on insects, worms, larvae, snails, termites, maggots, marine wastes etc. to satisfy the protein, mineral and vitamin needs. The improvement backyard chicken varieties could not sustain only on scavenging. There is a need for the provision of small quantity of compound poultry feed for good performance. It has been observed that chickens allowed supplementary feed yield high flock sizes, high growth and fertility rates, and are less prone to diseases and parasites ^[21]. Therefore, farmers should be trained to formulate rations using home-grown feeds.

The provision of protective housing along with food and water supplementation can help to reduce morbidity and mortality and contribute to increased productivity ^[18, 2]. Housing at night time is very much essential as it protects chickens from extreme weather prevent from predators, facilitates feed supplementation, inspection or vaccination of chickens as required ^[2].

8. Strategies for improving backyard poultry production

8.1 Availability of good germplasm

There is heavy demand for backyard chicken varieties among the farmers. Concerted research efforts are to be put in more vigorously to meet this challenge. As these birds are improved varieties, the character broodiness has been virtually lost, replacement stocks are to be made available continuously from the public sector units.

8.2 Vaccination

Non availability of veterinary aids and skilled workforce for vaccination at village level, results in the devastation of the flock by diseases mainly by New Castle disease. Therefore improved veterinary services with disease prevention programmes are to be put in the place for better results.

8.3 Marketing

The backyard poultry products fetches higher price and are in heavy demand. However, creation of farmers co-operative society at village levels, bodies for price fixation and egg collection and marketing will enhance the profitability further.

8.4 Biosecurity issue

At present highly pathogenic avian influenza (HPAI) is a serious constraint to family poultry production, which requires mass destruction of the poultry of the outbreak locality. It is therefore essential to chalk out programmes to prevent such outbreak and method to be adopted towards these directions.

9. Managemental aspect ^[23]

For the purpose of egg and meat production different improved breeds like Vanaraja, Giriraja and Gramapriya etc. Birds can be reared in free range conditions if plenty of natural feed resources are available. For maintaining the good

flock and get maximum production additional feed supplementation is required.

9.1 Management of small chicks

Small chicks require proper care during their early life. Brooding is required upto 6 week to maintain required body temperature and protecting themselves from cold and predators. For this purpose low cost brooding material like metal or wooden material can be used depending on the availability of material. Electric bulbs (2 Watts/ chick) can be used as a heat source. To prevent the spreading of chicks and to restrict their movement near heat source chick guard can be used. Initially about 7-10 sq. inches space is recommended per chick under brooder.

Housing is the vital component of poultry management. It can be constructed with locally available low cost materials like bamboo, wooden planks, polythene sheets etc. To get maximum production it is required to satisfy their nutrient requirement with complete balanced feed along with minerals and vitamins. Feeder and waterer should be made in such away that feed and water will be easily accessible to all the birds. Number of waterer and feeder should be adjust according to number of birds. It make sure that fresh and clean water should be available at all times. Vaccinated should be done time to time against several diseases like Marek's disease, Ranikhet disease, gumboro, fowl pox etc.

9.2 Management of adult birds

Birds can be reared in free range system after 6 week of age. During the day time birds should leave free for scavenging and only night shelter is required for them. Night shelter should have good ventilation, adequate light and protection from predators. Before allow them out from the night shelter clean drinking water should be given. Under free- range system birds are depend only on scavenging to meet their protein requirements. However, it is advantageous to feed birds with some locally available gains and cereals like maize, bajra, jowar, broken rice, with equal parts of rice polish or rice bran is to meet their energy need and prolong the production under free- range conditions ⁽⁹⁾. Mineral and vitamin supplementation can also be done to get maximum production. Proper cleaning of night shelter is required. Proper deworming and medication should be done for healthy production.

10. Conclusion

In India, Agriculture provides about 100 to 120 days employment to the rural poor. Scanty land holding, land fragmentation and seasonal agriculture are not able to provide full employment to the workforce which in turn creates disguise unemployment. To overcome the issue it is feasible to adopt backyard poultry farming to meet their livelihood. Rural poultry production act as an important component to improve socioeconomic status among the weaker section of society. Improvement in poultry sectors play a crucial role in increasing egg and chicken meat production. Poultry farming provides source of income and generate employment to large number of people in rural areas. In Indian condition advancement of the rural backyard poultry sector can definitely contribute to poverty alleviation and nutritional improvement. It is very much necessary to raise awareness about this venture. Major constraints include low productive and reproductive efficiency, high mortality, poor veterinary health care and extension services and poor housing and

nutritional status. Improve food security and standards of living of the rural families are an outcome of a better understanding and modulation of these constraints. In rural areas proper use of locally available indigenous feed resources and ethno-veterinary medicine, training and educating farmers can be viable options to improve backyard poultry production.

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