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Alternative poultry production for rural livelihood: A review

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Abstract

Similar to animal husbandry, Indian villages have acquired skill of backyard poultry farming as alternative poultry production for their livelihood. Small, marginal, landless labors, tribal and vulnerable section of people in the countryside mostly refer to these colored indigenous birds. Many varieties of colorful indigenous fowls exist in the hands of the tribes. In spite of low productivity and broodiness, these birds are widely accepted by the rural poor due to low inputs, minimum care, social, ethical and economic factors. However, some Indian and International organizations have worked in this area and the work is still in progress. The future scope of village poultry production is very much promising as it addresses more than 70% of the rural mass. It is high time to approach these groups with a package of practices acceptable to them so that they could become able to produce both eggs and meat in the rural sector with least expenditure. Systematic and scientific assistance is required to make this sector viable, profitable and to lift them from the vicious cycle of poverty & malnutrition. This review paper throws light on aspects on such alternative poultry production.

Keywords: Alternative poultry, livelihood, indigenous fowl

Introduction

India is an agricultural oriented nation; most of the Indian population derives its livelihood from agriculture (FAO, 2019) [38]. Livestock with poultry in broader sense is considered to be the backbone of Indian farmers. It is a major contributor in Indian economy (Nath *et al.*, 2012) [6]. In some of the developing countries including a country like India, rural poultry farming has been recognized as a paramount importance tool for income generation as well as improvement of livelihood of rural poor. Now, there is an increase in trend of growing market, infrastructure, which adds to backyard poultry for rural production which is consumed mostly at home (Conroy *et al.*, 2005) [39]. Most of the poultry production units which are managed at peripheral regions of city are organized and commercial in nature. They generally rely on exotic/ exotic cross breed birds. On the other hand, the eggs and meat produced in the backyard have considerable demand and are sold at a higher price in the urban areas. But, when the eggs from the urban area reach in the villages the demand price for the backyard production reduced at village level due to the cheaper rate and easy availability of commercial eggs. The Regional Centre, C.A.R.I. after a detailed survey, developed the package of practices and successfully introduced the high yielding colored birds with more profit and as a source of additional income for the poorest poor (ICAR, 2015) [40]. Rearing cost especially the feeding cost of backyard poultry is negligible as they are dependent on free scavenging, wastes of household and residual farm produce (Sonaiya *et al.*, 1999).

Features of Indigenous fowl

Indigenous breeds of fowl are utilised in rural and tribal areas due to their ability to withstand varied and harsh climatic conditions (Khan, A.G. 1984; Sonaiya, E.B., 1996; Kitayli, A.J., 1966; Sheldon, B.L., 1998) [18-21].

Table 1: India has 19 registered indigenous breeds which are given below:

S.N.	Name	Home tract
1.	Ankaleshwar	Gujarat
2.	Aseel	Chhattisgarh, Orissa, Andhra Pradesh
3.	Busra	Gujarat, Maharashtra
4.	Chittagong	Meghalaya and Tripura
5.	Danki	Andhra Pradesh
6.	Daothigir	Assam
7.	Ghagus	Karnataka and Andhra Pradesh
8.	Harringhata black	West Bengal
9.	Kadaknath	Madhya Pradesh
10.	Kalasthi	Andhra Pradesh
11.	Kashmir Favorolla	Jammu and Kashmir
12.	Miri	Assam
13.	Nicobari	Andaman & Nicobar
14.	Punjab brown	Punjab and Haryana
15.	Tellicherry	Kerala
16.	Mewari	Rajasthan
17.	Kaunayen	Manipur
18.	Hansli	Orissa
19.	Uttara	Uttarakhand

Source: ICAR- National Bureau of Animal Genetics Resources

Morphological features

Plumage colour is found to be mostly black or brown/red. On the other hand colors white to grey and sometimes yellow to slight orange colour (Williamson and Payne, 1990; Nwosu *et al.*, 1985; Tuitoek *et al.*, 1998) ^[22, 33] feathering on neck is found full feather (Barua and Yoshimura, 1997) ^[28] sometimes naked neck, beak colour is dominantly dark grey or black coloured (Nwosu *et al.*, 1985) colour of skin ranges from mostly white to yellow, red and sometimes dark bluish hue (Mohammed, 1995) ^[29], feet and toes color are seen as blackish to cream (Mohammed, 1995) ^[29].

Productive features

Egg production/year is reported to be 80 to 90 (Adedokun and Sonaiya, 2001) ^[26] whereas some have reported 138-160 eggs per year (King'ori, 2004) ^[25], egg weight ranges from 35g to 46- 48g as reported by (Akinokun, 1990; Olwande *et al.*, 2009) ^[30] day old chicken body weight varies (Cockerels/pullets) 32-33g/ bird (Adedokun and Sonaiya, 2001) ^[26] body weight at 20 week bird has been found as pullets to be 1062g, cockerels as 954-1096g (Chemjor, 1998) ^[27, 33] FCR has been reported under intensive housing to be 5.2-5.5 (Chemjor, 1998) ^[27, 33], scavenging without protein supplemented to be 7.6-15.6 and with protein supplementation to be 5.8 – 6.0 (King'ori, 2004) ^[25].

Reproductive features:

Age at sexual maturity generally is 218-225 days (Rashid *et al.*, 1995) ^[23], egg hatchability (%) ranges from 77-89 (Mohammed, 1995; Moreki *et al.*, 2010) ^[29].

The present system of village chicken production

It can be noticed that there are multi-colored indigenous fowls at every household. Both meat and egg type breeds are available with variable colour patterns but have common characters of broodiness and poor egg production (40-60 eggs/year). The egg type breeds are usually smaller and the adult female body weight varies from 1.2 to 1.5kg. On the other hand, the cocks are around 2.0 to 2.5kg. In the meat type

breed, the body weight of adult females varies from 2.5 to 3.5kg and males 3- 4.5kg. Naked neck, Frizzle, Assel are common heavy birds. Others are egg type. Nowadays entry of the exotic breed crosses is also available in village chicken production, which is similar to the indigenous stock.

Husbandry Practices

Practically no special housing facilities are arranged for keeping a small flock of 5-10 birds. They are provided with a cave-like structure at the entrance of their living hot where these birds are allowed to stay only in the night. The entrance of the cave is protected with a wooden plank. Some of the households provide raised platform, perches or bamboo baskets in the corner of a room. Hanging baskets are provided to broody hens with eggs for hatching. Some of the households allow their birds to stay in the rooftop of trees nearest to their living room. Nowadays some progressive farmers having 50-100 birds are providing small rooms with wire mesh walls and asbestos roofing.

Feeding

Provision of balanced and organized feeding is commonly unpracticed for such birds in villages. At times, the kitchen waste and handful of grains are provided to them when they reach owners house to lay of eggs and for night stay. The broody hens are carried more with the available feeds during the brooding period. The scavenging birds search their food from the surrounding of the households, grain fields, manure pits, and kitchen pits, etc. from morning till sunset.

Health care

Practically no health services are provided to these hocks. This may be due to the poor communication and approaches as most of the tribal villages are located either on swampy land or on hillocks in the forest where veterinary services are difficult. The simple belief that indigenous fowls are resistance to diseases is more logical but not scientific. It is true that these fowls are resistant to their adaptability to free range harsh type management. These birds are equally susceptible to infectious pathogens but severity and death rate usually less compared to commercial farming. Mortality up to 30-40% is usually recorded in free-range birds due to the negligence of the owner. Most of the deaths are related to predator attacks or poor feeding. The main killer disease in village chicken production is New Castle Disease (ND). This is otherwise known as GHUMA in the local language. It accounts as the highest economic loss in the village production as the outbreak usually occurs once in every year. The other common outbreak is fowl cholera, fowlpox, and Infectious coryza, Chronic Respiratory Disease Diseases Etc. Among the parasitic disease tapeworm, & roundworm infections are common but the outbreak of coccidiosis is not a major problem like that of commercial farming.

Nowadays small units of commercial broiler farms are coming up in remote areas by the educated youth as a source of self - employment, which poses various disease problems to this rural poultry. Thus it is mandatory to reduce the losses by imposing mass vaccination programmes to all the birds in & around the villages. At times it is difficult as the birds are maintained in distance places where approaches are difficult. In free-range multi-age groups are always available which requires continuous monitoring from time to time.

Socioeconomic aspects and ownership in rural poultry

The socioeconomic aspect of rural poultry differs in different countries. In India and Bangladesh, the women and children mostly manage the small flocks of birds in the backyard. The women are considered as the poultry keepers. The ownership of poultry goes to the male or head of the family who is the decision maker of village chicken production. In African countries like Ethiopia Kenya, Uganda Tanzania the ownership is divided among women and men.

The rural poultry production is one of the important sources of income for the people who have no landed property. Even in some countries like Nigeria people used to earn a higher income than daily wages (Kaiser, 1990) [5]. Sincerely in Ghana this backward poultry supplement 15% of the household income to some families. Although no statistical data is available, the profit margined in an Indian village is much higher than commercial poultry because of low inputs & higher demand.

Labor profile

Indian tribal mostly the housewives are known as the pillar of the family. They are overburden with various activities starting from a collection of firewood, cooking of family food, looking after the children, agricultural & animal husbandry activities, etc. Most of them habituated in rearing these poultry birds with routine activities of attending the broody hens looking after the young chicks, a collection of eggs, counting the bird daily in the morning & evening. The marketing of live birds & eggs looked after both wife and husband.

Distribution of benefits

The main benefits of rural poultry are sale or exchange for goods. The other benefits are social obligations, entertaining the guests and relatives.

Future scope for Alternative Poultry Production

In order to enhance the production of egg and poultry meat, appropriate technology for the small farmers may be developed and transfer of technology should be given top priority till it is delivered to the end users with least dissemination loss.

In a developing country like India where 70% of the total population lives in villages depending on agriculture & animal husbandry activities, the village chicken production should be given top priority to the economically weaker groups. They should not be neglected at the cost of sophisticated commercial farmers mostly managed by rich people.

Detail survey will record the data of flock management size, inter-household level, and inter-village level to identify the relationship & their effect on flock management and epidemiological problems. Improvement in skill of small farmers can positively affect production, market value and overall their income may be enhanced. It is advisable to motivate them to adapt new poultry keeping for better profit orientation.

Constraints faced during Backyard Poultry Rearing

There are always many constraints in rural backyard poultry farming in ascending order as reported by many researchers. Those constraints include, Attack by predators, complaints by neighbor, spoilage of eggs in summer, unstable price, lack of breeding stock, low productivity of village poultry, low

hatchability, lack of protection against disease, lack of adequate scavenging area, and lack of family support (Bharti *et al.*, 2019; Khan, MA., 2006; Chaturvedani *et al.*, 2015; Rawat *et al.*, 2015) [37, 36, 34, 35].

Conclusions

Summing up the above discussion it can be inferred that alternative poultry production for sustainable livelihood. There is a scope and perspective in the alternative poultry production in India. Proper extension services to farmers may encourage them to adopt this enterprise for their sustainable livelihood. Alternative poultry may be called as an entry point for the poverty reduction. Approach should be developed to improve to village production with technological intervention. Targeted people should be poor. In this respect, government policies should be made which emphasize on the market system.

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