who have consumed the ‘functional eggs’ have recorded significantly lower TG, TC, LDL-C and VLDL-C levels and higher HDL-C values, at the end of the experiment, compared to the initial values, indicating the health promoting, cardiac friendly and beneficial effects of designer eggs. Moreover, the panelists have graded that the designer eggs were more acceptable than the regular eggs.

CONCLUSION

Several types of functional foods from various sources have been developed and some are available in the market under various brand names. Since the production costs of the functional foods are higher, they are sold at two to three times the price of regular products. Inspite of higher prices, the health conscious public are buying them. Hence, there is great scope for this functional food industry to grow.

REFERENCES


14

BACKYARD POULTRY FARMING IN INDIA

R. Asha Rajini,
Education Cell,
Madras Veterinary College,
Chennai 600 007

ABSTRACT

Backyard Poultry Farming was in practice since time immemorial as a subsidiary income to the poor. This age-old practice is increasing day by day and presently 19% of the total egg production in India comes from these rural range reared birds. Tribal people also rear these birds for cultural, social and recreational needs. Women play a major role in the maintenance and upkeep of this family poultry and are also know to better manage the income that is obtained through these birds. Maintaining these birds is very economical and less time consuming, and the rural poor can be trained to better manage these backyard birds, so as to obtain higher gains by providing better brooding care, vaccinating the birds and providing clean water and balanced feed. Our indigenous birds are much more adaptive to a hot humid environment unlike the hybrid birds. Rural marketing of eggs and poultry meat must not be linked with the urban system of marketing. Unemployed youth in villages must be trained for marketing and sales of eggs and meat.
INTRODUCTION

There is a growing awareness and recognition of backyard poultry farming as a tool for poverty alleviation in developing countries. In developed countries, organic chicken farming is very much in vogue. India is an agricultural country and has a large number of indigenous domestic chickens and most households including poor and landless, rear poultry as this requires a very small investment. Poultry is mainly owned and managed by women and children.

There is no generally accepted definition of rural poultry production and various production systems have been described by a number of authors, including Ainu (1990a), Cumming (1992), Alemu (1995) and Dessie and Ogle (1996). The production systems are characterized as including small flocks, no or minimal inputs, with low outputs and periodic destruction of the flocks by disease. Birds are owned by individual households and are maintained under a scavenging system, with little or no inputs for housing, feeding or health care. Typically the flocks are small in number with each household flock containing birds from each age group with an average 5-7 mature birds in each household, consisting of 2 to 4 adult hens, one or two males and a number of grower of various ages. According to AAMC (1984), in Ethiopia there is an average of six indigenous birds per household and according to Sonaiya (1990), the average flock size in Africa ranges from 5-10 birds. As described by Dessie and Ogle (1996) the village poultry production systems are characterized by minimum inputs, with birds scavenging in the backyard and no investments beyond the cost of the foundation stock, a few handfuls of grain and possibly simple night enclosures (Alamu 1995).

Rural poultry represents a significant part of the rural economy. In addition to their contribution of high quality animal protein and as a source of easily disposable income for farm households, rural poultry integrates very well in a sustainable way into other farming activities, because they require little in the way of labour and initial investment as compared with other farm activities. Sonaiya (1990), has outlined that rural poultry plays a significant role through its contribution to the cultural and social life of rural people.

SOCIO ECONOMIC ASPECTS OF FAMILY POULTRY

In spite of modern intensive poultry production in India on par with developed countries, backyard poultry farming is still continuing since time immemorial. Nearly 70 percent of the Indian population live in rural areas, of which 50 percent have family poultry consisting of 5-10 birds/family, of which the hens will be two per family laying 50 to 120 eggs/hen/annum, depending upon the variety and feed available in the backyard. If an average of 50 eggs is taken/hen/annum, the total number of eggs produced by these birds alone is 7.2 billion eggs, which works out to 19% of the total eggs produced in India. Sonaiya (1997) stated that in Nigeria the eggs from village poultry accounts for 12.3% of the total egg produced.

The nondescript birds account for nearly 90% of the rural poultry population. Five percent of the birds will be Indian breeds like the Kadaknath, Naked Neck, Aseel and
Kalasthi. The remaining five percent will be improved varieties like Nandanam, CARI Gold, Vanaraja, Giriraja and crosses of white leghorn and Rhode Island Red. Commercial hybrid chickens are very rarely reared in the backyard. Bhattu (1999) described rural poultry as indigenous and nondescript, while Sonaiya (1990) described these birds as improved and unimproved variety. In studies by Sharma et al. (1999) the productivity and profitability of the existing rural poultry production was enhanced by two folds through use of improved germplasm. The egg production of nondescript and indigenous breeds under range conditions will be 50-60 eggs/ hen/ annum; whereas improved varieties and crosses under range system with very little supplemental hominy feed provide 100-120 eggs/ bird/ annum (Table 1).

The indigenous bird under scavenging conditions matures only at 210 days of age. The foraging hen lays the cheapest egg. Eggs produced are partly used for domestic consumption and the rest are sold at double the price of the commercial table eggs at Rs.3/per egg. These eggs are bought at a premium price because, they are considered to possess higher medicinal and nutritional values. Similarly, the country fowl is sold at a premium price of Rs.80 while the commercial broiler is sold only at Rs.25/ per kg live body weight.

Rural poultry represents a significant part of the rural economy. It not only contributes to high quality animal protein, but also serves as a source of easily disposable income for farm households.

Since the egg production and growth rate are very poor in the birds used for backyard poultry farming, it will not be economical to maintain them profitably under scientific rearing and feeding. The birds used for backyard are very hardy and are able to withstand various diseases. They can survive with unbalanced feed available in the range and this unbalanced feed is sufficient to tap the needed genetic potential of these nondescript birds. Moreover, feeding will not give extra returns to meet the extra cost. In this Indian model the farmer will buy just once the base population which will be multiplied every year under the broody hen, no housing or equipment is provided except may be a small coop or bamboo basket. Even water is not provided since the birds get water from the nearby fields, cattle sheds or from the nearby manual water pump.

Backyard poultry using indigenous birds and improved variety with no expenditure on feed and other inputs will be more economical than backyard production of birds fed with commercial feed and commercial egg production.
ECONOMICS OF RAISING 100 NON-DESCRIPT/IMPROVED VARIETY OF CHICKEN ON RANGE

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Indigenous or Nondescript (Range)</th>
<th>Improved Variety (Range)</th>
<th>Commercial Layer (Intensive System)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of one ready to pullet (Rs)</td>
<td>Rs. 80</td>
<td>Rs. 75</td>
<td>Rs. 80</td>
</tr>
<tr>
<td>Cost of 100 pullets (Rs)</td>
<td>Rs. 8000</td>
<td>Rs. 7500</td>
<td>Rs. 8000</td>
</tr>
<tr>
<td>Feed Cost (Rs)</td>
<td>@ 0.15/Bird/Day</td>
<td>@ 0.30/Bird/Day</td>
<td>@ 0.80/Bird/Day</td>
</tr>
<tr>
<td>For 100 birds/year</td>
<td>Rs. 5475</td>
<td>Rs. 10950</td>
<td>Rs. 29200</td>
</tr>
<tr>
<td>Other Expenses(Rs)</td>
<td>Rs. 300 (0.25/B/M)</td>
<td>Rs. 480 (0.40/B/M)</td>
<td>Rs. 1320 (1.1/B/M)</td>
</tr>
<tr>
<td>Eggs Laid/annum</td>
<td>50</td>
<td>100</td>
<td>300</td>
</tr>
<tr>
<td>Rate/ Egg (Rs)</td>
<td>Rs. 3.0</td>
<td>Rs. 2.0</td>
<td>Rs. 1.5</td>
</tr>
<tr>
<td>Returns by way of selling eggs (Rs)</td>
<td>Rs. 15000</td>
<td>Rs. 20000</td>
<td>Rs. 45000</td>
</tr>
<tr>
<td>Cost of 1 Kg culled bird (Rs)</td>
<td>Rs. 90</td>
<td>Rs. 70</td>
<td>Rs. 25</td>
</tr>
<tr>
<td>Average final body weight(kg)</td>
<td>1.25</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Returns by sales of birds (Rs)</td>
<td>Rs. 11250</td>
<td>Rs. 10500</td>
<td>Rs. 3750</td>
</tr>
<tr>
<td>Total Expenditure (Rs)</td>
<td>Rs. 13775</td>
<td>Rs. 18930</td>
<td>Rs. 38520</td>
</tr>
<tr>
<td>Total Returns (Rs)</td>
<td>Rs. 26250</td>
<td>Rs. 30500</td>
<td>Rs. 48750</td>
</tr>
<tr>
<td>Net Profit (Rs)</td>
<td>Rs. 12475</td>
<td>Rs. 11570</td>
<td>Rs. 10230</td>
</tr>
</tbody>
</table>

(Rajini and Narahari 2002)

ECO-FRIENDLY BIRD

Developing countries are showing a shift towards more meat, milk and eggs in the human diet, and a relative decrease in the consumption of cereals and starchy foods. It is expected that the total demand for eggs will increase five-fold between now and 2050. As this demand increases in all regions, the population of laying hens needs to be increased to meet the growing demand. It is expected that the shift towards more intensive poultry production will lead to more ammonia and phosphorus excretion. According to FAO predictions, the NH₃ emission from animal waste in developing countries will increase considerably from the current 15 million tones NH₃ - Nitrogen per year to 20 million tones in 2010 and 24 million tones in 2025. Part of the NH₃ plays a role in atmosphere aerosol formation and chemical reaction where by N₂O is formed in the atmosphere.

In intensive production system, the primary environmental concerns arise from animal excreta and associated problems of water and gaseous pollutants. Odour from animal waste is a major problem in densely populated areas. Phosphorus is another major pollutant of the soil and water, due to intensive poultry farming, while the backyard poultry tends to be eco-friendly and also provides health promoting food for all. This family poultry is independent, eco-friendly and in no way will interfere with the steady growth of intensive poultry farming.
ECO-FRIENDLY; HOW?

In India, unless there is some disagreement, every body's land and agricultural fields in the rural area serve as a huge scavenging field for every family's chicken!

- The droppings of all these birds will enrich the soil especially the kitchen garden.
- The odour that is of major concern under intensive poultry raising is not of great concern here.
- The birds eat insects and worms and thereby act as 'Bio-pesticide'.
- The birds scratch the soil and acerate it.
- The garbage clearance in rural areas is non-existent; similarly toilets are lacking in rural areas where open fields are used as toilets. The rural poultry will scavenge on this night soil and waste biomass, thereby reducing pollution and at the same time converting it to valuable egg and meat.

ORGANIC HERBAL EGG

In India, there are a variety of medicinal herbs like *Azadirachta indica*, *Eclipta alba*, *Oscimum sanctum*, *Tribulus terrestris*, *Vitis quadrangularis*, *Wedelia calendulacea* and many more that just grow wild in and around the villages. These herbs serve as part of the production of 'organic herbal egg'. These eggs are a further improvement over the nutritionally enriched 'designer' egg. These eggs will not only serve as nutritionally enriched food but also supply valuable herbal supplements to the consumers, which will promote their overall health status. The rural range reared bird eggs have lower cholesterol levels than the eggs of commercial layers, while the b-carotene levels in the range raised birds egg is almost double that of the commercial layer egg (Vasantha Kumar and Rajini 2003)

ADAPTIVE ADVANTAGE OF RAISING INDIGENOUS BIRDS

Colored indigenous birds are well adapted to live on range they are able to thrive well under a harsh eco system with scarcity of grains and greens. There are no recognized breed of indigenous fowl in India but little attempts have been made to differentiate them on genetic scale.

These colored indigenous birds can camouflage with the environment.

- These birds have excellent mothering instincts and brood well.
- Their alertness to the presence of predators and their amazing capacity for flight or fight is unmatchable.
- High temperatures with high humidity serve as major limiting factors in poultry production, but the indigenous bird, particularly the naked neck bird with a superior egg production and meat yield,
Poultry for Sustainable Food Production and Livelihood

performs well in an environment where the average temperature is 30°C and more (Singh et al., 2001).

- These birds have fewer feathers and they require less protein which further result in reduced feather picking and cannibalism.

WOMEN IN BACKYARD POULTRY FARMING

The critical role of women in producing food, nurturing future generations and furthering development in general has been increasingly recognized. Improving conditions for rural women should be the central objective of all, as women are more affected by periods of economic stress. Women account for more than one-half of the labour required to produce food; women spend their additional income which comes from family poultry on investments in family welfare and this has a potentially greater, immediate and long term impact on poverty than increased earnings from men. Poultry is a unique tool to reach the poor women under minimum disturbance of the patriarchal family pattern. Poultry has always remained a woman’s domain and the income from poultry is in the woman’s hand, and she is much more responsible with this money earned than the man.

COMMON DISEASE AND MORTALITY

One of the major constrains in backyard poultry farming is undoubtedly the existence of various diseases. The most prevalent disease is the Ranikhet disease which sometimes has wiped out all the poultry in a village, Fowl pox and endo-parasites are added problem; recurring losses are severe with high mortality in young chicks and this could be the reason why the numbers of chicks in a household are not very high. The government veterinary extension centers must be well equipped to vaccinate all these village poultry and the rural folks must be educated about vaccinations and parasite control. India is the only country in the Asian region that is self sufficient in vaccine production (Aini 1990b).

PROBLEMS OF RURAL MARKETING

Rural marketing is beset with various problems, mostly due to the geographic spread of villages and distance from the main markets. Rural salesmen are inefficient, and this could be attributed to illiteracy.

The traditional marketing activities of promotion, distribution, Sales and servicing, undertaken so far in the urban and semi-urban areas are not available to the rural poor.

The major hurdles in tapping the rural markets can be summarized as:

1. High distribution cost.
2. High initial market development expenditure.
3. Inability of the small retailer to carry stocks without adequate credit facility.
5. Inadequate infrastructure facilities (Lack of physical distribution, roads, warehouses and media availability).

6. Highly dispersed and thinly populated markets.

7. Low per capita and poor standards of living social, economic and cultural backwardness of the rural masses.

8. Low level of exposure to different product categories and product brands.

9. Cultural gap between urban-based marketers and rural consumers.

STRATEGIES FOR RURAL MARKETING

Rural markets must not be appendages of the urban markets, since rural markets have their own independent existence and, if cultivated, could turn into profit generating market. Rural markets can be exploited well by ruralising them, rather than treating them as convenient extensions of the urban market. The focus should be on injecting a marketing culture into the villages. The educated unemployed youth in the villages could be trained to carry out this mission.

1. Decentralizing rural markets by detaching them from the urban bases, a give-and-take two-way approach should replace the present one-way exploitation.

2. The salesmen in rural markets should be selected from the educated unemployed from villages. The town-to-villages shuttling salesmen are to be replaced by stationery salesmen in villages.

3. Companies should also adequately concentrate on educating the villagers to save them from spurious goods and services.

4. Rural markets must be well informed to pick up new products.

CONTRAINTS AND REMEDIES OF BACKYARD POULTRY PRODUCTION

Constraints

1. Economic backwardness to spend money on better management of chicken.

2. Lack of awareness about improved breeds.

3. Lack of knowledge on vaccinations and carelessness in protecting the birds against diseases, particularly, Ranikhet.

4. Warring off of predators during the brooding stages.

5. Not taking time to train the birds.

6. Lack of a marketing system.

7. Unaware of parasitic load.

Remedies

1. The training programmes of universities/NGO's must reach down to the rural poor.
2. As noted earlier, women should be made the target group as they account for more than one half of the labour required to produce food in the developing world.

3. Local veterinary centers should be well stocked with vaccines and doctors imbied with a duty to visit these small poultry sectors to vaccinate the birds, also he/she must insist on these birds being vaccinated by spending some time to explain the pros and cons.

4. Training programmes can teach the women on providing the birds with a better-balanced feed with the available ingredients.

5. Providing clean potable water for the birds is a must, and this can be made available even in ordinary mud pots.

6. Improved varieties like the Nandanam, B2, Giriraja, Vanaraja, etc., may be introduced in the rural areas.

7. Teach the women and children to take care of the brooding chicks. They could be placed inside mud, bamboo house or a small enclosure and watched.

8. Women can be taught to select the good layers and to sell the poor ones, thus improving egg number through 'selective breeding'.

9. The naked neck fowl is able to withstand high environmental temperature and still perform well. These birds can be advocated along with the improved varieties as a backyard bird.

REFERENCES


Australian Agricultural consulting and management company (AACMG) 1984. Poultry production project, Main report – Adis ababa.


15
REARING OF BIRDS IN INTEGRATED FARMING SYSTEMS

K. Sundaresan and P. Kumaravel,
Department of Veterinary and Animal Husbandry
Extension and Entrepreneurship,
Madras Veterinary College,
Chennai 600 007

ABSTRACT

A considerable portion of India’s land cover is under wastelands, and the marginally poor farmers find the going tough in rearing of cows, sheeps and goats in these wastelands. Hence, rearing of domesticated birds like ducks, geese, guinea fowls and turkeys in these wastelands is one of the alternative viable propositions for these resource poor farmers. These domesticated birds feed on the weeds and grasses grown in the wastelands and in turn protect the environment. Further, the droppings of these domesticated birds form rich source of manure for improving soil fertility of wastelands. The eggs and meat obtained from the domesticated birds also fetch a sizeable amount of income for the sustenance of the poor farmers

INTRODUCTION

In recent years, tree plantation and cultivation of grasses in between the trees are being practiced in wasteland areas. The farmers who are facing asset poverty are in a frequent situation of rearing cattle, sheeps and goats in these wastelands.