DIVERSIFIED POULTRY PRODUCTION UNDER INTENSIVE SYSTEM

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Both broiler and layer production systems have become capital intensive and “large volume – small profit” is the formula of major egg and poultry meat producers in the country now. Consequently, small and medium scale poultry farmers find it difficult to compete with the major poultry production firms. The cost : benefit ratio does not work in favour of such small / medium scale farmers.

The scope for them lies in diversified poultry production like turkey, color broilers, native chicken, guinea fowl and cockerel rearing for meat and Japanese quail and ducks for egg and meat. As the demand for eggs and meat of diversified poultry is mostly limited and localized, many small and medium scale poultry farmers opt for diversified poultry production without much competition from large scale farmers. Of late, these farmers attempt to rear diversified poultry under intensive system and their production practices are different form semi-intensive / free range system of rearing native chicken, turkey etc. Such practices followed in Southern India for diversified poultry production are documented hereunder.

1. Japanese quail production

Japanese quail were introduced to Indian farmers during early 80’s and its small size and different taste made it a delicacy. However, large scale Japanese quail production has not been undertaken for a long time barring a very few like A.V.M. Hatcherries, Coimbatore. The initial production potential of Japanese quail was 130 g body weight at six weeks of age with a feed efficiency of 3.6-3.8. As the bird starts laying immediately after six weeks, it is also used for egg production. Small mottled Japanese quail eggs are in great demand in some areas like Kerala. Contract farming for broiler production and intensified large scale layer farming systems have diverted the attention of small and medium scale farmers towards Japanese quail production.

The scientists of the country also improved the performance of meat type Japanese quail and at present, strains weighting 180-200 g at market age at four weeks of age with a cumulative feed efficiency of 2.4-2.6 and livability of 88-92 per cent are available and are taken advantage of. Layer quail produce at an average of 75-80 per cent HDEP. For breeding, a sex ratio of 1M : 3F is adopted widely and the total hatchability varies from 63-72 per cent. Floor space allowance given is 45 cm² per chick at day old which is gradually increased to 180 cm² at four weeks. Breeder and layer quails are provided with a floor space of 225-250 cm² depending on body size on deep litter. Commercial meat type Japanese quail are mostly reared under deep litter system only and both deep litter and cage rearing systems are in practice for rearing layer / breeder quail.

**The feeding standards for adopted Japanese quail as follows**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Nutrient</th>
<th>Unit</th>
<th>Commercial Meat Type</th>
<th>Layer / Breeder</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Single Phase (0-5 weeks)</td>
<td>Two Phase (0-2 weeks)</td>
</tr>
<tr>
<td>1</td>
<td>Crude Protein</td>
<td>%</td>
<td>24</td>
<td>25.5</td>
</tr>
<tr>
<td>2</td>
<td>Metabolisable energy</td>
<td>Kcal / kg</td>
<td>2750</td>
<td>2750</td>
</tr>
<tr>
<td>3</td>
<td>Lysine</td>
<td>%</td>
<td>1.45</td>
<td>1.48</td>
</tr>
<tr>
<td>4</td>
<td>Methionine</td>
<td>%</td>
<td>0.53</td>
<td>0.55</td>
</tr>
<tr>
<td>5</td>
<td>Calcium</td>
<td>%</td>
<td>1.10</td>
<td>1.10</td>
</tr>
<tr>
<td>6</td>
<td>Av. Phosphorus</td>
<td>%</td>
<td>0.45</td>
<td>0.45</td>
</tr>
</tbody>
</table>
Colibacillosis, mycoplasmia, coryza, brooder pneumonia and clostridial infections are a few diseases noticed in commercials while fowl cholera, egg bound and fatty liver syndrome have been noticed in breeders.

2. Native Chicken under Intensive Rearing

Rearing native chicken under intensive system is widely followed in Western Tamilnadu. Most of them are Asael / Aseel crosses with different levels of cross-breeding. The author has personal knowledge of one farm growing pure Aseel obtained from ICAR institutes and improved by mixing with locally obtained “Aseel” cocks over five generations.

Native chicken fetches high premium price in the retail market compared to broilers for its flavour and taste, moderate toughness of meat, distinct pigmentation etc. Hence, even comparatively poor growth performance indicators of native chicken do not hamper the interest of the farmers. As “Aseel” blood imparts characteristic flavour and pigmentation of the meat to an extent even in intensively reared native chicken, the demand for the birds remains high both in urban and rural areas.

The breeders of intensively reared native chicken are kept even up to three years with an average of 95-100 eggs produced per female per year. Sex ratio is maintained at 1M : 8F and total hatchability is 76-80 per cent. The commercial birds are marketed at 13-14 weeks of age when they attain 1.0-1.1 kg body weight with a cumulative feed efficiency of 3.8-4.0. Livability is about 90-94 per cent. They are maintained under a two / three phase feeding. Under two phase feeding, starter ration with 20 per cent crude protein and 2650 Kcal of M.E. per kg is provided while the finisher contains 16 per cent protein and 2700 Kcal M.E. per kg. The crude fibre level is maintained up to a maximum of 5.3 and 6.5 per cent respectively. The breeder ration has 17 per cent crude protein and 2.25 per cent calcium. Coli bacillosis and coccidiosis are diseases mostly recorded in commercials and lymphoid leukosis and egg peritonitis in breeders. As the commercials and breeders are debeaked twice at 16 d and 40 d, cannibalism is not witnessed as much.

3. Turkey Rearing

Beltsville small white and its cross Nandanam turkey 1 varieties supplied by Tamilnadu Veterinary and Animal Sciences University constitute the bulk of the turkeys reared in the area. The above medium weight varieties are preferred over heavy weight Broad breasted bronze turkeys supplied by the University and another government institution in Kerala due to market demand for small size. Commercial turkeys are reared with a floor space of 450 cm² up to four weeks and 1350-1800 cm² up to market age of 12-14 weeks at which age a male weighs about 3.0-3.25 kg and female 2.25-2.50 kg each. Coal brooding is widely practised. Turkey brooder mash with 26 per cent crude protein up to four weeks and a finisher with 20 per cent is fed up to market age. The cumulative feed efficiency is observed to be 3.8, livability 90-92 per cent and the cost of production works out to Rs.105-110 per kg live weight. Unlike seasonal demand that existed until a few years before, turkey meat is demanded round the year now.

Turkey breeders are also reared on deep litter with a floor space allowance of 3.5 and 4.5 sq.ft. for each female and male respectively. Feeders at different heights are employed for males and females, reared with a sex ratio of 1M : 5F. Turkey breeder ration with 16.50 per cent C.P. and 2.25 per cent calcium has been found to result in 60-65 per cent HDEP and equal level of total hatchability. Artificial insemination is not practised and breeders are kept only up to first six months of laying and sold to market and replaced with a new batch as both per cent egg production and hatchability go down gradually as age advances. During the period each turkey hen produces about 65-75 poults. Coli bacillosis and pox are the common disease problems encountered.

4. Ducks for Meat and Eggs

Ducks are reared for both meat and egg as limited localized demand exists in specific areas for both. White Pekin is reared specifically for meat and Khaki Campbell for egg. Kuttanad ducks are reared for dual purpose. Confined rearing of ducks includes a pen and a run and the automatic waterers (drinkers) are provided in the far end of the run in a sequence with a drain channel running underneath. This system prevents wetting of the litter in the pen. Floor space allowances in the pen and run arranged at a ratio of 1.8 : 1.5 vary depending on the type / breed of duck reared.
White Pekin ducks attain a body weight of 1.9-2.0 kg each at six weeks of age with a feed efficiency of 2.5-2.6 and 94-96 per cent livability. Duck feed for meat type birds contain crude protein and M.E. of 23 per cent and 2850 Kcal per kg in starter and 20 per cent and 2950 Kcal in finisher ration. Kuttanad ducks are sold to market at 12 weeks of age with a body weight of 1.2 Kg per bird and a feed efficiency of 3.0-3.2. Coal breeding is adopted up to three to four weeks of age. The feed is diluted proportionately to support the moderate growth performance of Kuttanad ducks.

Duck breeders are maintained with a sex ratio of 1M : 6F in case of White Pekin and 1M + 8F among Kuttanad ducks. HDEP ranges from 70-72 per cent for one year with a total hatchability of 55-60 per cent. Khaki Campbell layers produce more intensely with a HDEP of 78-80 per cent. White Pekin and Kuttanad eggs weigh above 70 g each, while Khaki Campbell eggs weigh 60-62 g.

5. Guinea Fowl Rearing

Guinea fowls are reared in backyards of farm houses and of late, they are also preferred for meat. Buying guinea fowl as day old, growing them up to four weeks and selling them for homestead farming is a popular practice. Mostly pearl variety is reared, though grey and lavender are not uncommon.

The parents are obtained from research institutes mainly and under native farm conditions, they start laying at about 24 weeks and continue to lay round the year producing above 170 eggs per year per bird reaching a peak of 91 per cent HDEP. They are not seasonal layers in this part of the country. Total hatchability under artificial incubation is observed to be 76-78 per cent. Per cent livability is very high averaging 96-98 per cent in parents with only leg weakness being the common ailment leading to death. Occasionally, fowl cholera is noticed. Sexing is done based on the distinct sound of male / female, the size of helmet and the shape of the head and body.

Commercially, the day old keets are reared under coal brooding up to 2-3 weeks and sold to market at four weeks at Rs.55-60 per bird. For meat purpose, they are reared up to 12 weeks at which age they weigh about 950 g with a cumulative feed efficiency of 3.2-3.4. Barring sporadic deaths during brooding and due to coli bacillosis, no major disease outbreaks have been reported.

6. Colour Broilers

There is considerable demand for hatching eggs of colour broilers and also for four weeks old multi-colored birds of heavier type. Many strains / strain crosses are in the market. Products of broiler breeding programmes undertaken by national institutes / SAUs are mostly used viz. giriraja, vararaja, Nandanam chicken 2 etc.

Parents are reared on deep litter or in cages. On deep litter, a sex ratio of 1M : 6F is used while artificial insemination is practised in cage rearing. Egg production ranges 65-68 per cent HDEP with total hatchability of 82-85 per cent. The hatching eggs are sold at Rs.7.50-8.50 a piece while the chicks are grown up to four weeks and sold to market at a rate of Rs. 25-30 per bird. Their growth potential is lower than commercial broilers, but are preferred for their heavy size and multicolor plumage.

7. Cockerel Rearing

The discarded White Leghorn male chicks are also reared in a few farms to cater to the specific requirement of small restaurants and eateries. They are obtained from layer hatcheries at a throw away price and reared on deep litter up to 8 to 10 weeks of age depending on the market demand. Market weight preferred ranges from 550 to 650 g per bird. Cumulative feed efficiency works out to 3.0-3.2 with a per cent livability of 94 to 96. The cost of production works out to Rs.50-55 per bird. Coccidiosis and cannibalism are the few problems witnessed.

Thus, as an alternative to high performing broilers and layers, diversified poultry production also has taken roots and the past experience of the poultry farmers has led to adoption of intensive system of rearing for these kinds of birds and contract farming of diversified poultry species is also on the rise. Small and medium scale poultry farmers thus constantly attempt, evolve and take advantage of the changing preferences of consumers and the shift in the industry for their own sustenance. It is the responsibility of the scientific community to take note of such developments and refine the technology to suit their needs.